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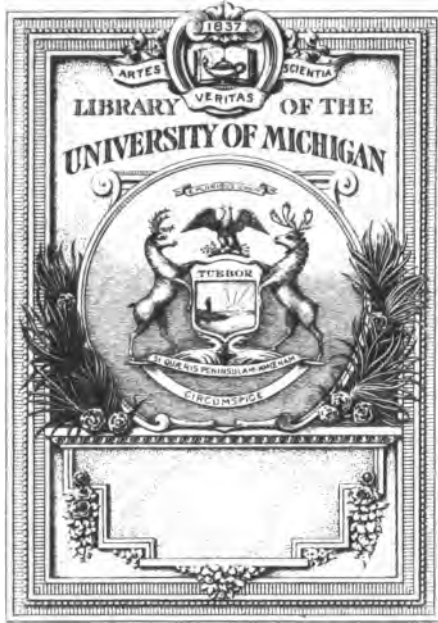
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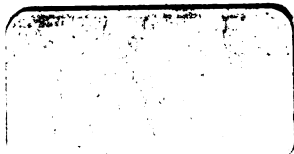
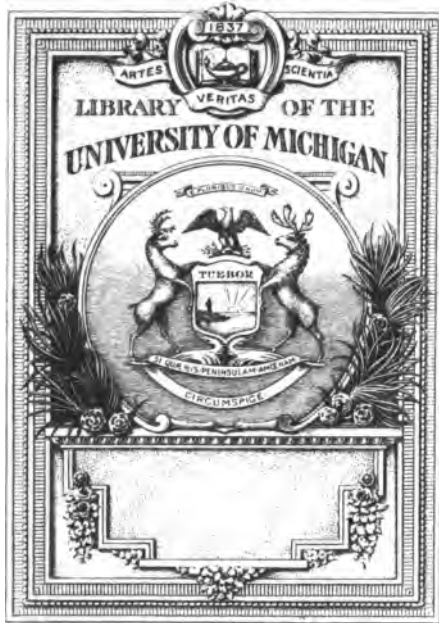
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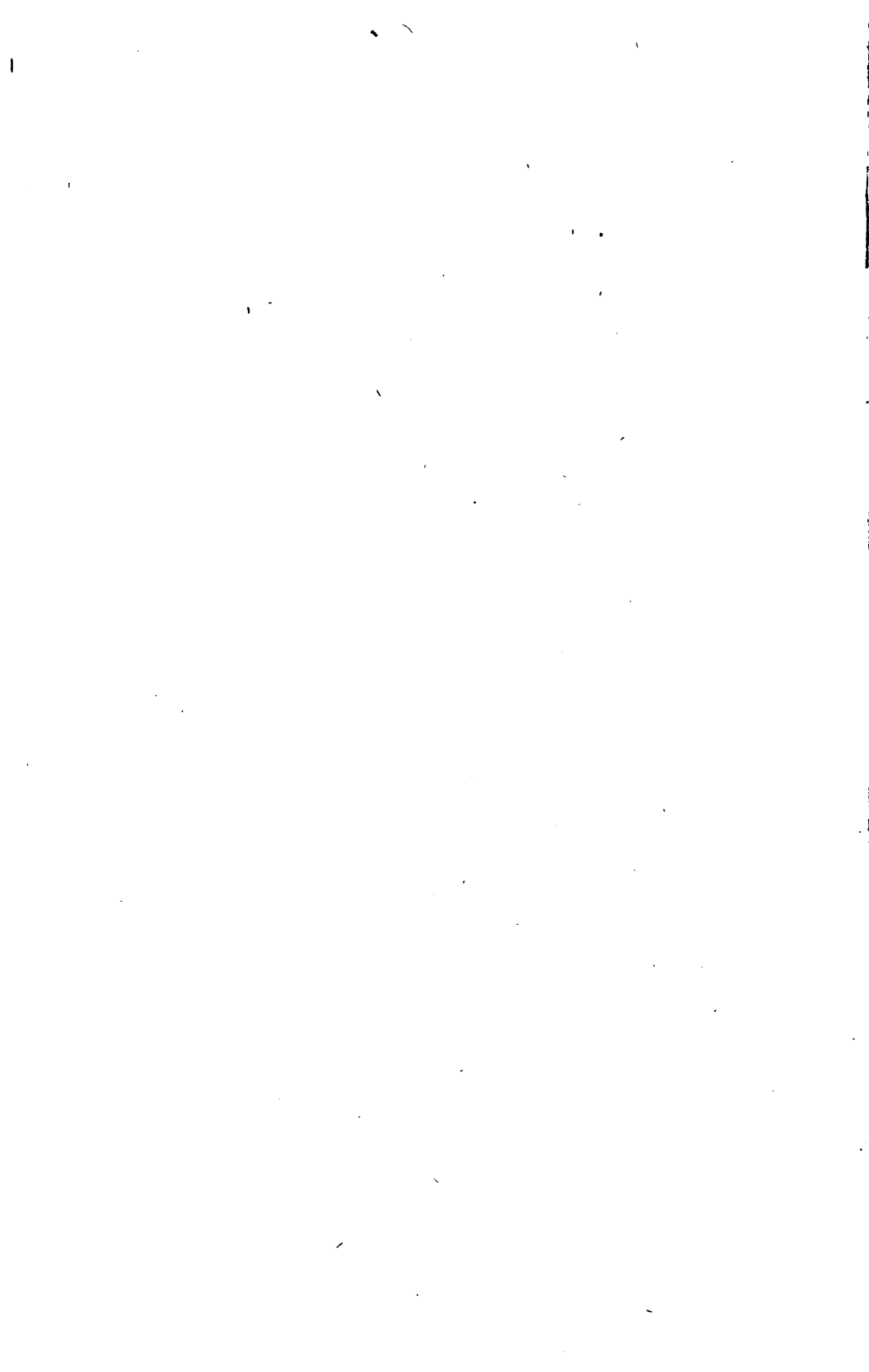
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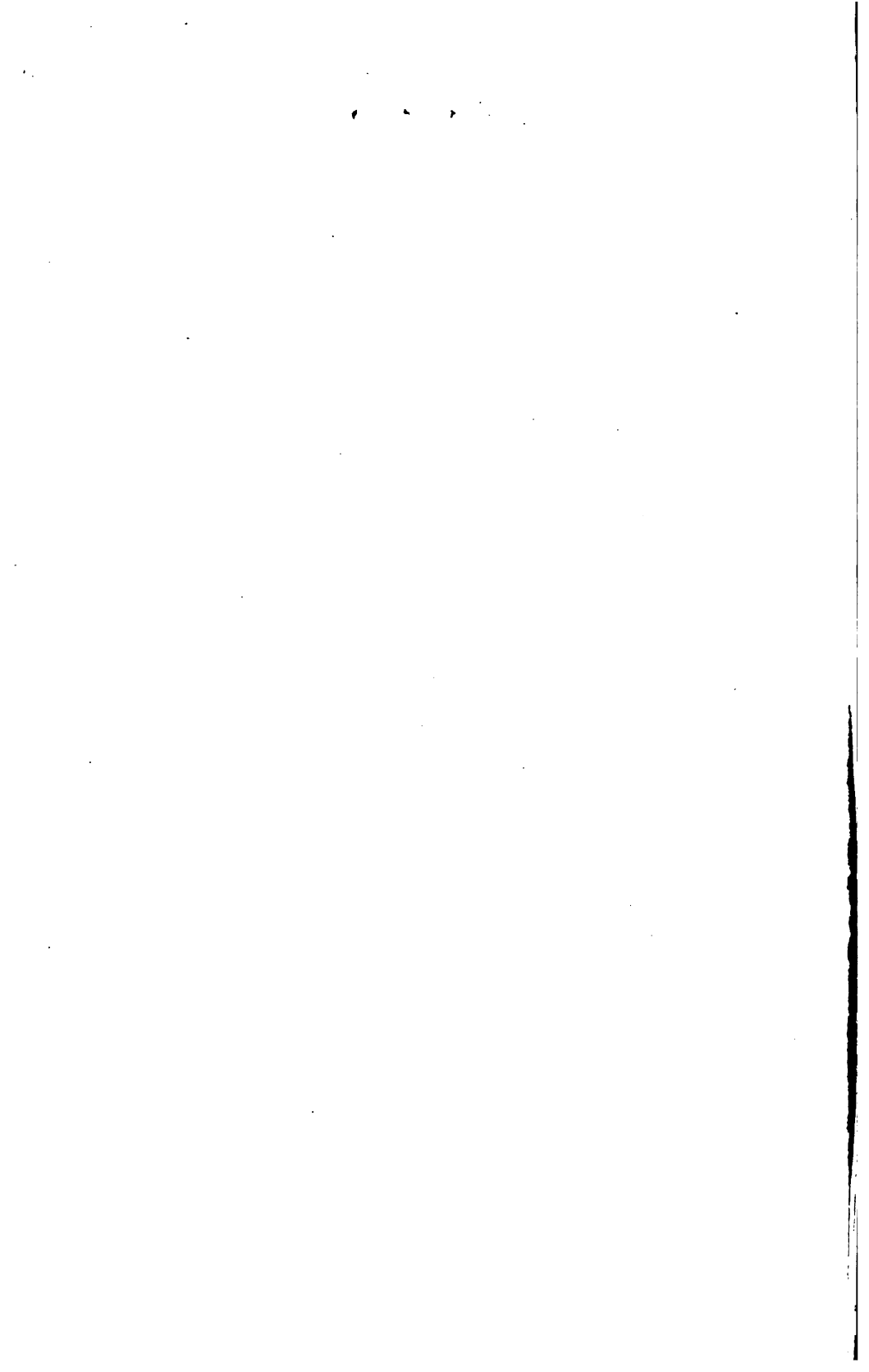


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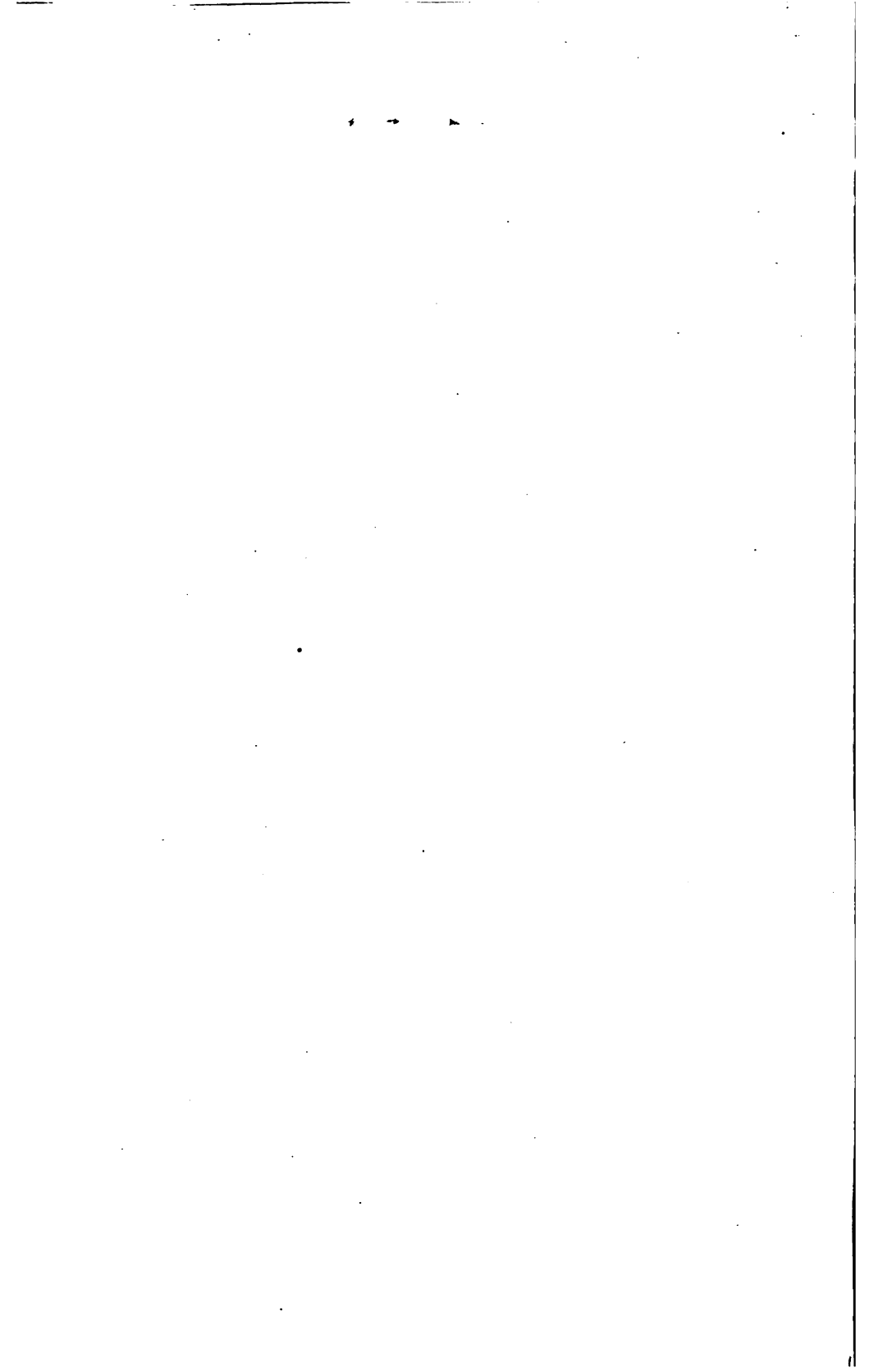


ERRATA

- Page 30.—Last line, 6th paragraph, “not” should be “now.”
- 47.—Line 3, 6th paragraph, “Oronhyatekha,” not “Oronhyatebeha.”
- “ 58.—Line 2, last paragraph, “1899,” not “1890.”
- “ 63.—Line 8, “Legion,” not “League.”
- “ 77.—Line 29, “Slavonian,” not “Salvonian.”
- “ 78.—Line 13, “Protective,” not “Protection.”
- “ 93 and 94.—Last and first paragraphs should be leaded.
- “ 94.—Line 6, “and,” not “an.”
- “ 119.—Line 16, “low,” not “lower.”
- “ 192-3-6.—Should be general headings.
- “ 204.—Line 3 from bottom, “S,” not “R.”
- “ 205.—Line 7, “C₂₀,” not “C₂₁.”
- “ 207.—Next to last line, insert “of 1” after “contract.”
- “ 208.—Twelfth formula, last term should be, “ $12(N_x^{12} - N_{x+n}^{12})$.”
- “ 210.—Third line from bottom, “s” in “month’s” out of alignment.
- “ 211.—Last formula, “ $1000P_x = 1000M_x + (N_x + eM_x - (R_{x+1} - R_{x+1+e_x}))$.”
- “ 211.—Line 9 from bottom, “insured,” not “insuranced.”
- “ 215.—Line 10, for “Another,” write “A quite.”
- “ 216.—Line 10 should be “ $a_x - a_{x+1}$.”
- “ 216.—In table, heading should be “No. 1 Continued.”
- “ 216.—In table, lines 39 and 40, “ $a_{22} - a_{21}$ ” should be “ $a_{22} - a_{22}$ ”
- “ 217.—Line 4th from end of paragraph 1, should be “69,” not “79.”
- “ 220.—Line 8, strike out comma after “death.”
- “ 224.—Line 10, “following” should be “preceding.”
- “ 232.—Line 12, “insurance,” not “insurants.”
- “ 234.—Lines 7, 8, 14 and 26, should be “ $1V_{35}$,” not “ $1V_{35}$.”
- “ 234.—Third formula should be “ $P_{35} \times \frac{1+i}{p_{35}} - \frac{q_{35}}{p_{35}} = P_{35} \times u_{35} - k_{35} = 1V_{35}$.”
- “ 235.—Line 18 should be comma, not semicolon, after “protection.”
- “ 240.—Line 12, “the,” not “he.”
- “ 241.—Line 6, should be “amount,” not “number.”
- “ 245.—Line 32, should be “27.82,” not 50.58.”
- “ 263.—Line 15, after “gives” insert “the summation of.”
- “ 265.—Line 9, “heirs,” not “heir.”
- “ 267.—Line 18, “I” instead of the editorial “we.”
- “ 271.—Line 8th from bottom, “bow-wows,” not “bow-bows.”
- “ 283.—Line 17, change “three” to “two” and “four” to “three.”
- “ 291.—Line 20, “the,” not “these.”
- “ 299.—Line 25, “an,” not “as.”
- “ 301.—Line 36, “ A_{xy}^I ,” not “ A_{xy}^I .”
- “ 304 and 5.—Heading “ $1000q_{xv}$,” not “ $1000q_{xv^x}$.”
- “ 342.—“log. i_{35} ” should be “.81023,” not “.91023.”
- “ 343.—“In heading and bottom page d_x^I should be d_x^I .”
- “ 354.—Table XXXIII, “i_x” should be “ i_x .”
- “ 358.—Add for reference pages at “Group Insurance.....98-9.”
- “ 359.—Add for reference pages “Mortuary Accretions.....260-1.”
- “ 364.—In proper place insert:
- “Maternity Benefits.....300-1.”
- “Benefits for Member’s Wife.....301-2.”
- “General Comments.....302-3.”











300

*Yours sincerely
Abb Landis*

LIFE INSURANCE

By ABB LANDIS



REVIEW of the Business as Conducted by Friendly Societies, Fraternal Orders, Life Companies, Industrial Companies and Open Assessment Associations, and History of the Five Kinds of Organizations. Explanations of Valuations.

ERRATA

- Page 30: Sixth paragraph, last line, "not" should be "now."
Page 205: Second formula Cap C.
Page 208: Twelfth formula should end $+12(N_x^{12} - N_{x+n}^{12})$.
Page 211: Last formula, $P_x = 1000M_x + (N_x + eM_x - (R_{x+1} - R_{x+1+e_x}))$.
Page 216: Should be "No. 1—Continued."
Page 216: Should be $a_{22} - a_{21}$, not $a_{22} - a_{21}$ in No. 2.
Page 217: Fourth line from end of first paragraph 69 not 79.
Page 263: Should be "Column 1 gives summation of number dying."

for the Compilation of Statistics for valuations and Reports.

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NASHVILLE, TENNESSEE

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ATTENTION

Faint, illegible typed text, likely a cover letter or business communication.



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Abb Landis

LIFE INSURANCE

By ABB LANDIS



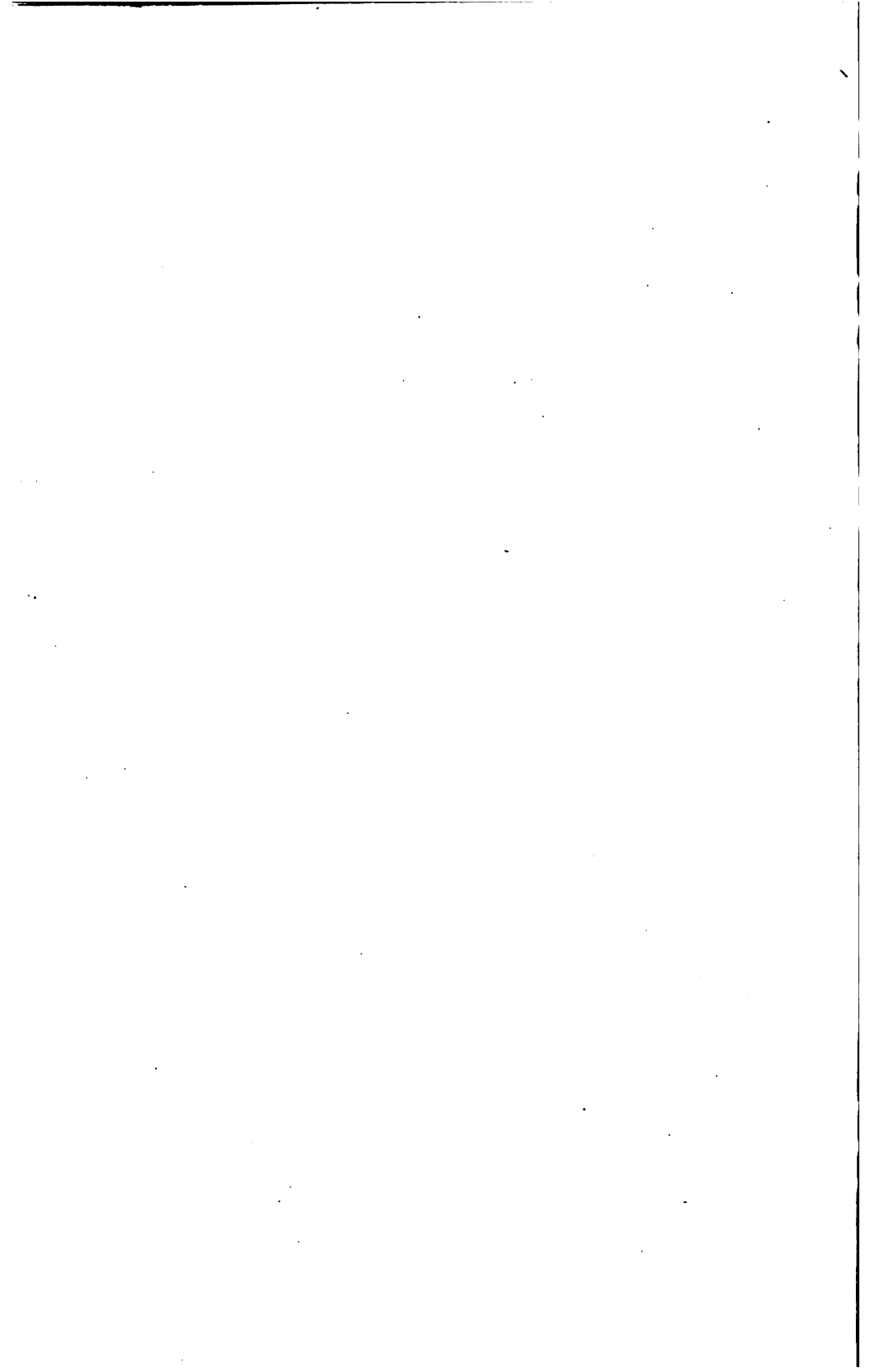
REVIEW of the Business as Conducted by Friendly Societies, Fraternal Orders, Life Companies, Industrial Companies and Open Assessment Associations, and History of the Five Kinds of Organizations. Explanations of Valuations. Methods of Computing Annual and Single Premiums for Insurances and Annuities, Application of Commutation Columns, Formulas for Benefits and Contributions. Compilation of Reserve Values and Forty Important Tables of Contributions and Commutation Columns for Death and for Disability and for Combined Death and Disability Benefits; and Six Mortality Tables for Males, for Females, and for Males and Females Constructed on the Experience of Forty-three Fraternal Beneficiary Societies. Derived Values from the National Fraternal Congress Table of Mortality at 3%, 3½% and 4% Interest, and the American Experience Table and 4% Interest. Comparison of Reserves Accumulated under Different Mortality Tables and Different Forms of Contracts. Illustrations of the Prospective and Retrospective Methods of Valuation are given in detail, with their relation to the Provisions of the Mobile and New York Conference Bills, together with Instructions for the Compilation of Statistics for Valuations and Annual Reports.

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INTRODUCTION.

In response to an announcement that I would revise and rewrite the five books, "Friendly Societies and Fraternal Orders," "Insurance Past and Present," "Life Insurance Premiums, How Computed, Tested and Valued," "Analyses of Fraternal Societies," and "Life Insurance Problems" (all of which were out of print), there were received one hundred and nineteen subscriptions at \$10.00 per copy for the proposed publication. The actual expenses incident to the publication exceeded the total of subscriptions. To many who had copies of the five books, \$10.00 per copy appeared high for what they believed would be largely a duplication of the books already purchased. In consequence, many who have always been purchasers of other publications are not numbered amongst the subscribers for this book. However, it is not a duplication of previous books, and I am responsible for making a somewhat misleading first announcement. It was in mind at the time to merely revise and rewrite, but I have reproduced only the pertinent parts of the other publications, and give more pages of entirely new matter than the total pages of the other books, not including their tables. When this fact becomes known I hope to receive additional orders for the limited number of extra copies over the subscription edition.

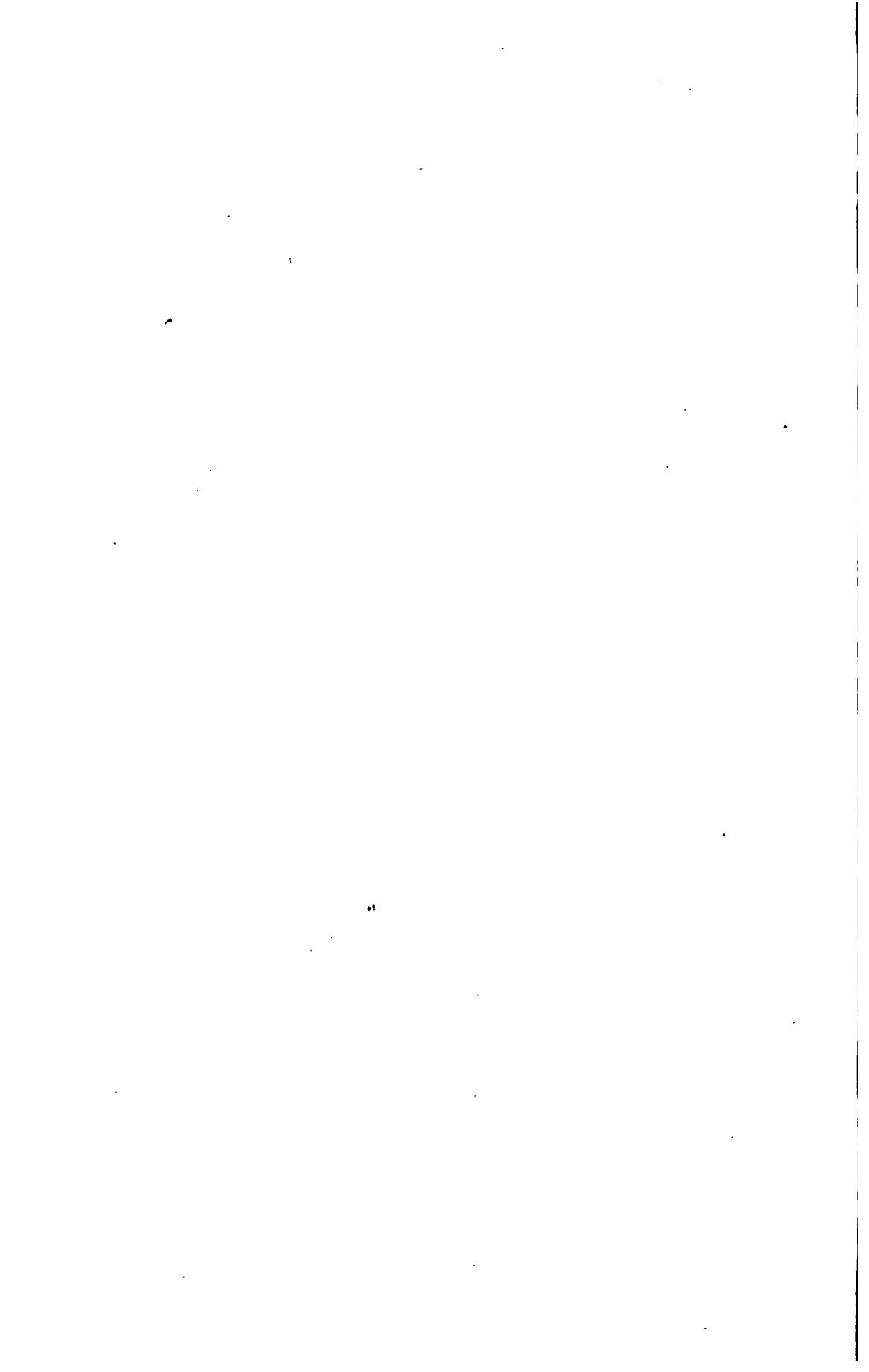
The new and exclusive tables given in the Appendix should be worth \$10.00 to any insurance office, or to any consulting actuary. At any rate I have tried to make the book worth the price. To fraternal beneficiary societies, in addition to the two score of important tables, the discussion of Readjustment, Expenses, Computation of Contribution Rates, Valuation, Reserves, Actuarial Principles and the Application of Formulas should give \$10.00 in value.

Not as an advertisement but as a reason for the subscription price, I have made this introductory statement.

Many times I have been called as a witness in court proceedings, and invariably the attorneys desired to impress the court by having the names of the societies which have given me employment as an expert. Recently I was called upon for such a statement, and in giving a list of fraternal beneficiary societies on pages 75-79, it occurred to me that it would be a mark of appreciation to indicate by a star those which had favored me. There have been changes in official management, and there have been changes in actuarial advisers, but there remains to me a lasting advantage from the knowledge acquired through personal service rendered to the more than 140 organizations, with their varied plans and experiences.

Nashville, Tenn., March, 1914.

A. L.



ORIGIN OF FRIENDLY SOCIETIES.

Associations of the nature of Friendly Societies existed two or three centuries before the Christian Era. In ancient Greece they were called *Thiases* and sometimes *Evanes*. *Thiases* is derived from *Thiazo*, which means to lead a chorus or dance. *Evanes* is derived from *Evanos*, which signifies a contribution, or a collection, especially for a feast. It also means money, in the same sense as *evanizomai*, meaning "I beg an alms"—or collect, or get together alms. The societies were formed for the purpose of celebrating festivals in common to some divinity, and the members being so associated in pleasure (and semi-religious worship) fell into such close relations and good fellowship that it followed inevitably from the promptings of human nature that they should render assistance to those who might be reduced to want through sickness. Collective pride and brotherly feeling led to the custom of providing suitable funerals for deceased members. Thus grew up private corporations (recognized by the State), which had their laws, officers, degrees, contributions and benefactions, and their regular meeting places. They were, in ancient times, numerous in many important cities. At Rhodes there were the "Companions of the Sun," "The Sons of Bacchus," of "Minerva," of "Jupiter Atabyrius," of "Jupiter the Savior." At Athens, the "Heroists," the "Oregons," and the "Thiasotes."

A society organized for the worship of "Diana and Antinous," according to an inscription found 19 miles from Rome, at Lanuvium, made regular collections from members for the expenses of feasts and festivities and for the funerals of deceased members. In case of death there were allowed for funeral expenses 300 sesterces (about \$11.00). The entrance fee was an amphora of good wine and 100 sesterces (\$3.75) and the monthly dues of five asses (about four cents).

Most friendly societies are of modern origin. There is really no direct connection between them and the "Gilds," much less the more ancient orders. Association of individuals at public houses, or in the same kind of work, or otherwise, brought about good fellowship and personal regard, and produced the effort to assist one another. Human nature has been the same for ages and, whenever subjected to similar conditions, similar results follow. Thus have been formed the Friendly Societies of England and the Fraternal Beneficiary Societies of America.

The Friendly Societies of Great Britain had their *real* beginning with the Act of 1793, and the present organizations are the direct outgrowth of the institutions which accepted the benefits of registration under that Act. The Fraternal Beneficiary Orders in the United States had *their* real origin in the starting of the Ancient Order of United Workmen, by Father Upchurch, in 1868. Unfortunately, he was wholly ignorant of what had been accomplished in Great Britain and failed to profit by seventy years of available experience along the lines upon which he was starting his great work. Other fraternal orders followed the A. O. U. W. in rapid succession, but none of them took advantage of similar experiments across the Atlantic. It will be seen, therefore, that the fraternal orders of America, while operating upon independent lines, have in effect repeated the history of the Friendly Societies in respect of promises to, and payments by, their members—especially have the errors and mistakes in relation to benefits and contributions been reproduced in the conduct and management of

fraternal orders. Had lessons been learned from the Friendly Societies these mistakes and errors could have been avoided.

Mr. George F. Hardy, Fellow of the Institute of Actuaries, and one of the most noted and prominent of English mathematicians, wrote a prize essay upon the Friendly Societies in 1887, and gave the following succinct:

HISTORICAL SKETCH.

In considering the origin and development of the friendly society system, it is necessary to recognize the twofold purpose that these institutions have fulfilled. In the view of the actuary they are merely associations for the mutual assurance of certain benefits, generally in the case of sickness or death of any of the members. This, however, represents only one side, and that by far the most recent, of the work of these institutions. A not less prominent and much older feature is to be found in the opportunities for social intercourse, companionship and mutual help, which such associations naturally afford—wants common to man in every state of society, and as old as civilization itself. Hence, from the earliest times, small communities have existed, drawn together by the common interests, tastes or pursuits of the members, such communities being originally purely social in character, subsequently charitable and mutually protective, and only in recent times financial.

Prior to the thirteenth century, aid was generally dispensed to the necessitous by the church. Being the central and only receiver of contributions for this purpose, and the sole dispenser of relief, its charitable functions covered the same kind of wants that our friendly societies deal with at the present time. These functions were to feed and clothe the destitute, to visit the sick, to house the homeless, to liberate prisoners, and to bury the dead—in its own words, *vito, poto, cibo, redempto, tegeo, colligo, condo*.

In the thirteenth and fourteenth centuries a great social change took place. Agricultural serfdom was gradually breaking up, industries began to develop and a general tendency was manifested by society to forsake the socialistic order of things. As regards the relief of the poor, the first effect of the change was the taking over of part of the functions hitherto performed by the church by smaller communities of persons, each community, or guild, as they were called, having a more or less distinct and well-defined object.

The following paragraph in the statutes of the Guild of Smiths of Chesterfield is of great interest: "When a brother is ill and needs relief, then he shall receive half a dime daily; when brethren fall into poverty, then they shall go singly, on certain days, into the houses of their brethren, where each one shall be received civilly, and he shall obtain whatsoever he may need in the shape of food and clothing, as if he were the master of the house himself; and he shall also receive half a dime, like those who are ill, and then he shall go his way in peace." It is to these guilds that we must look, rather than the protective, trade guilds, which then existed, for the progenitors of our modern friendly societies.

The period of the Reformation was another era of change in the direction of self-assertion and self-help, and the general tendency affected the guilds quite as much, perhaps, as the change from Catholicism to Protestantism. In the fifteenth century they began to decay. Corruption and abuses were not uncommon amongst them, as in the convents and other religious foundations. This state of things culminated in the sixteenth century in the passing of Acts 27, 31, and 37 of Henry VIII, and 1 of Edward VI, which enabled the king to confiscate the property of both guilds and monasteries.

In the sixteenth and seventeenth centuries some of these institutions which had survived the preceding period, and still retained sufficient cohesion, were reformed, whilst many new societies were started, embodying some of the features of the guilds but in conformity with more modern ideas.

The relief and economic system of these societies, moreover, underwent a radical change in the direction of requiring fixed contributions to be made by the members for the grant of specific benefits. As an illustration of the financial basis of such societies, it may be interesting to note that in one society the subscriptions were 2d weekly, to provide for benefits during sickness, of 6s. weekly for the first year, and

3s. 6d. per week for the remainder of illness, while a levy of 6d. per member was made at each death.

About the beginning of the eighteenth century a movement arose in the Guild of Masons which exercised a great influence in stimulating the rapid growth of friendly societies. By the introduction of mystic rites and observances, and by other changes, which need not be detailed here, the Guild of the craft of masonry was transformed into the Order of Freemasons.

The friendly societies existing at the close of the eighteenth century appear to have been very similar in the nature of their operations to those of the present day. It is difficult to estimate, with any degree of certainty, the number of societies or their aggregate membership, but there is good reason for believing that they were at least as numerous in proportion to population as at the present day. Sir P. Colquhoun, in 1796, estimated the number of societies in London at 600, with a membership of 70,000, while Sir F. M. Eden, five years later, considered that the whole kingdom might number 7,200 societies, with a membership of over 600,000. The amount of the sick pay allowed seems somewhat larger in proportion to wages than now, 6s., 8s., and 10s. a week being common sums; while the modern system, now all but universal, of reducing the sickness allowance in cases of prolonged illness, appears to have been at this date, rare, although, in some cases, the allowance ceased after a specified period of 13, 20, or 26 weeks of illness, and in others provision was made for the super-annuation of members at a reduced rate of pay.

It was very usual for societies at this period to limit their membership—101, 81, and in some cases 51 or 41 members, was made the limit of a society; though what superstition lay in the use of these numbers it is impossible to say.

The rules of the societies, as in earlier times, almost always exercised a paternal care over the morals and even the opinions of the members.

The friendly society system, on the whole, worked well, but it had many defects which became increasingly apparent. The societies having no legal status were open to fraud and corrupt practices, no prosecution being possible except in the names of all the members, the societies being regarded at law as partnerships. The uniform premiums did not answer well; as members grew old, younger men did not care to join, and bankruptcy often resulted. There was also too much feasting by members at the expense of the funds.

Mr. Hardy might have added to his last sentence the statement that "feasting" became such a feature, about the close of the eighteenth century, as to give the societies the name of "Free and Easies." There was a reaction against the dissipation characteristic of these clubs, and a marble mason, named Bolton, who had gone to Manchester from London in 1809, began an agitation for reformed methods, and, in 1812, succeeded in organizing an improved Order of Odd Fellows' Club, or Lodge. His scheme was to abandon the "free and easy" proceedings and make an effective provident institution, adapted to the wants of artisans whose occupations called them into various parts of the kingdom. Probably from this idea came the word "Independent," introduced into the name of his organization—as the "Lodges" at different places were to be *independent* of each other; while the "Manchester Unity" conveyed the other idea of general centralization in supervision and co-operation. The "Manchester Unity—Independent Order of Odd Fellows," was the pioneer of modern Friendly Societies, and today leads all others in the world in number of members and financial strength. Because of its age, its size, its success, its mortality and sickness experience, its errors and reforms, and its most comprehensive conduct in operation, the history of the Manchester Unity will cover all of the ground necessary to be turned, in order to reap the benefits from a study of past action and present prosperity of Friendly Societies.

LEGISLATION.

An important factor in the development of Friendly Societies was the several Acts of Parliament from 1793 to the last general law of 1896. As before stated, the pro-

ceedings at the periodical meetings had so degenerated into excessive festivities that provision against sickness and death had become jeopardized.

In 1787 Gilbert originated the idea of requiring each society to be registered in order to obtain legal protection; and it was his proposals undoubtedly which induced the framing and passing of the highly important Act of 1793, which practically settled the struggle between compulsion and *voluntaryism* in favor of the latter system.

The Act of 1793 marked a new era in the history of Friendly Societies. Their legal position before the Act, and the various abuses that resulted from it, have already been referred to. The Act remedied abuses by establishing some supervision and some safeguards as to the management. It required, for example, the submission of rules, and alteration of rules, to the justices at Quarter Sessions, who had power to confirm them or not at discretion. The objects of the society were to be specified, and a dissolution could only take place with the consent of the justices.

On the 21st of June, 1793, this first of the Friendly Societies Acts was passed, and it was commonly known as Sir George Rose's Act, the 33 Geo. III, c. 54.

It is not easy to systematize the various efforts made by the Legislature to control or to encourage, as the case might be, the Friendly Society movement between 1793 and the great Act of 1875. All of these attempts were necessarily of the nature of experiments, and were generally without any common plan.

In 1818 a bill was introduced providing for the appointment of five public valuers—in the language of the bill, "persons skilled in arithmetical calculations"—to whom tables and rules might be submitted at fixed fees. The fear of government interference, however, which was so common among members of Friendly Societies, caused this provision to be struck out of the Act of the following year (1819). This Act, however, provided that rules and tables of all future societies should both be confirmed by the justices at Quarter Sessions; and, moreover, contained the important provision that such justices should not confirm or allow any table of payments or benefits, or any rules dependent upon or connected with the calculations thereof, until it shall have been made to appear to such justices that the said tables and rules are such as have been approved of by two persons at least, known to be professional actuaries or persons skilled in calculation, as fit and proper according to the most correct calculation of which the nature of the case will admit. In the same way, dissolution could only take place with the consent of the trustees and under the certificate of two actuaries.

The Act of 1829 contained several provisions of considerable importance. By this Act, nearly all previous legislation relating to Friendly Societies was repealed, and the law consolidated. The Act allowed any number of persons to form a society and to make rules, provided that these latter should declare the purpose of the society, and that they should be submitted to a barrister or to the Lord Advocate for certification.

Perhaps the most important provision in the Act, however, was that requiring quinquennial returns of sickness and mortality to be made to the clerk of the peace, by whom they were to be transmitted to the Secretary of State and laid before Parliament; all societies neglecting to make such returns losing the privileges of the Act. The object was stated clearly in the Act to be the collection of data by which tables of the payments and allowances dependent on the duration of sickness and probability of human life may be constructed, "the present existing data of these subjects having been found imperfect and insufficient."

By the Act of 1834, the powers of the justices to decline to certify the rules, in cases where they might deem the tables insufficient, was withdrawn, as also was the priority of claim by societies upon the effects of trustees and others. The purposes for which societies might be formed, however, were somewhat extended, and were stated to be "for the mutual relief and maintenance of all and every the members thereof, their wives, children, relations, or nominees, in sickness, infancy, advanced age, widowhood, or at any other natural state or contingency whereof the occurrence is susceptible of calculation by average, or for any other purpose which is not illegal." It was carefully provided, however, that for any such general purposes, not being "natural contingencies," the contributions should be kept distinct and separate, or that the charges for these benefits should be defrayed by levies upon the members. The quinquennial returns were continued. The Act of 1846 imposed a penalty for failure to forward these returns, and appointed a salaried registrar, who was only to register rules when tables were certified by an actuary.

There was introduced in the House of Commons in 1849, "A Bill to make better provision for the Certifying the Tables of Contributions and Payments of Friendly Societies, and for ascertaining from time to time the Solvency of such Societies." This bill and several petitions thereon were referred to a Select Committee of the House, who were empowered to take evidence and to report their observations thereon to the House.

The principal paragraphs of the Report are as follows:

Your committee having read the clauses of the bill referred to them, thought it advisable to apply to the House for leave to take evidence on the subject; and having examined 16 witnesses, submit the following report:—

As the object of all these voluntary associations is in some way to provide by mutual assurance for the relief of their members in sickness, in old age, or other natural casualty or infirmity, and of their families at their death, it is obvious that the welfare of all classes is much concerned in the sound constitution and good management of such societies. Of late years, by the exertions of benevolent persons, and by means of a more extensive and accurate collection of statistical materials, better information has been obtained and diffused, of the calculations and principles upon which such societies ought to be based. Attention has been much turned to the defects inherent in the old clubs, and many societies on a sounder system have been established; still it is stated by the secretaries and others who have attended the committee that in the great majority of Friendly Societies and clubs at present existing, an accurate examination of their accounts would show that the rate of contributions is not sufficient to enable them to pay the benefits insured thereby; that in many instances they have been compelled to reduce or suspend their allowances; and those societies which have hitherto kept their engagements have probably been enabled to do so by a continual introduction of young members, so that the unsoundness of their tables has remained unnoticed. As a guide, then, and a safeguard to the ignorant, it has often been suggested, and was pressed upon the committee by some of the witnesses that the government should cause model tables to be constructed, and should enforce an adherence to them.

Mr. Nieson, the noted actuary, was the first witness examined by the committee:

Question:—Will you state to the committee what is the general result of your experience as to the sufficiency of the tables of Friendly Societies? *Ans.:*—That would require me to consider two classes of Friendly Societies. I believe Friendly Societies as they existed until a recent date were generally unsound, and chiefly so from an inadequate amount of contributions being required by their tables, at least by those having tables. Many of the societies still have no tables, but the committee are no doubt aware that the 9 and 10 Vict. (1846) makes it compulsory on societies established after the passing of that Act to have tables approved by competent authorities. To explain fully the reason why Friendly Societies have been

so unfortunate in acting upon inadequate terms would require rather a long disquisition. It, however, may be summed up in a very few words. The subject of Friendly Societies is altogether a very complicated one; in fact there is no vital statistic so difficult to be understood. . . . Then having in view the purport of the original question, it will appear from this explanation, that it is no wonder that until a recent period Friendly Societies were found to be exacting inadequate contributions for the benefits they promised. The difference is very remarkable, and for some particular kinds of benefit which are provided for by Friendly Societies adopting one data, and adopting the more recent data resulting from my own investigation, it came under my own inquiry that the contributions necessary for some purposes would be doubled in consequence. So that Friendly Societies established 20 or 30 years ago upon inadequate data may now, on investigation, find that they had all along been charging one-half less for some of the particular benefits than they ought to have charged; and many societies have proved this by experience. They have broken down in consequence of inadequate contributions. Some societies being alarmed by a gradual deficiency taking place year after year in their funds, have had recourse to a great many expedients by which to prop themselves up.

Mr. John Finlaison was the next witness and gave an account of the data from which he constructed his mortality tables in 1835, and Mr. A. G. Finlaison, the actuary, testified regarding the application of those tables to Friendly Societies. He stated that at the time (1850), few societies would accept a graduated table of contributions, according to age of entry. Those which had done so would only grade for ages above 45 up to about 55, when "the contributions for life, above that age (55) becomes so heavy that practically they are of no use to the society, no member being able to pay the rates."

It must be remembered that the rates were for death as well as for sickness benefits, and that the cost for both increase with age, being excessive at the advanced ages. That fact was demonstrated by these societies, as here shown, prior to 1835, and became such a threatening danger by 1850 as to justify a government inquiry looking to a bill to make better provision for tables of contributions and payments and "for ascertaining from time to time the solvency of such societies."

Thus it is seen that, 70 years ago, the same questions which are now presented in this country were considered and passed upon in England with the consummation in a satisfactory solution in 1875. Had conditions in Great Britain been studied and advantage taken of them by fraternal organizers in America, the meeting of present difficulties need never have occurred. But since our troubles do now exist, the next best thing to having avoided them, is to remove them. In that work we can be greatly aided by giving heed to reforms inaugurated and remedies applied in the Mother Country.

The Act of 1850 required a certificate in respect to annuity tables only, and limited the amount of benefits, especially in the case of children's assurance, allowed investments with National Debt Commissioners at a fixed rate of interest of 2d. per cent per diem, and allowed branches to register. This year was memorable on account of the founding of the well-known Royal Liver Friendly Society, which within twenty years reached a membership of over half a million.

Most of the features of the recent legislation were continued by the Acts of 1855, 1858, etc., the position of Friendly Societies remaining very much the same down to the important legislative enactment of 1875.

Two years after the Ancient Order of United Workmen was organized in the United States, and ten to twenty years before many of our large societies were organized, the English Government had such consideration and regard for the importance and necessity of fraternal insurance that a Royal Commission was ap-

pointed (1870) with instruction to thoroughly and exhaustively investigate the subject and to report their findings to Parliament

That investigation covered FIVE YEARS of painstaking and continuous work. The report of the Commissioners is the most valuable official contribution to insurance literature. Its importance cannot be over-stated. The Act of 1875 resulted from the broad and comprehensive recommendations of the Commissioners.

That report and the resulting Act of Parliament should have been studied by our legislators. They should have been studied by those who have been organizing and managing the Fraternal Orders in this country. The report should *now* be studied by them in connection with the Act of 1896, and subsequent amendments. These comments upon the legislation affecting Friendly Societies in Great Britain, cannot be more appropriately concluded than with a quotation from that report of the Royal Commission of 1870:

REPORT OF THE ROYAL COMMISSION.

In addition to the evidence received by ourselves, a great mass of valuable information is recorded in the report of our Assistant Commissioners, to whom we have to tender our best thanks for the zeal and ability which they have displayed in the fulfillment of their allotted portion of the work.

Without pretending to have exhausted the subjects assigned to us for inquiry, we venture to think that the materials we have collected afford better means of understanding them in their various bearings than any which have yet been laid before the public.

We found, indeed, the field opened before us to be so wide that we felt obliged to limit it. It might, for instance, have been interesting to trace the connection of Friendly Societies with the Gilds of the Middle Ages, their analogy to which has often been pointed out, and of which the constitution has been lately laid open more thoroughly to investigation than ever, through the publication of such works as the late Mr. Toulmin Smith's English Gilds; or again, to compare the Friendly Societies of England with those of other countries. We have abstained from following either line of inquiry. . . . In obedience to your Majesty's commands we have had prepared a sketch of the course of legislation, and a summary of the Statute Law, relating not only to Friendly Societies, but to all the classes of societies with which the Registrar of Friendly Societies is connected. We have thought that in thus going somewhat beyond the terms of our instructions under this head, we should facilitate the consideration of questions which will presently arise with reference to the office and duties of the registrar.

The evils to which Friendly Societies are most subject may be divided into (1) those which arise from the want of proper information, and which generally affect the principles on which the society is founded; and (2) those which arise from improper management, which may be the result either of ignorance, or of negligence, or of fraud. As regards the first class of evils, we believe that it is in the power of the government to do a great deal to correct it, without inconvenience to the public and without any undue interference with the liberty of the promoters of societies. As regards the second class, there is more difficulty, though we believe that something may be done in the way of securing publicity, and of providing readier means for the detection and punishment of fraud. Possibly, too, it may be found feasible and desirable for the government itself to enter directly into competition with certain classes of societies and to afford the public an alternative provision for certain classes of objects. But this is a matter to which we shall refer hereafter.

From the details previously given, it would appear that the condition of Friendly Societies is generally far from being such as to afford to their members any security that they will receive the benefits for which they have subscribed.

A main cause of the widespread insolvency of Friendly Societies is the inadequacy of the rates of premiums for the benefits promised.

Before a proper table of premiums can be constructed, the following preliminary inquiries are necessary: (1) What are the occupations and conditions of life of the

persons who are likely to constitute the society? (2) What rates of sickness and mortality will such a society probably experience? (3) What table of premiums probably corresponds with such experience?

We desire to draw particular attention to the suggestion which we have made, that the government should prepare and publish proper tables of contributions and benefits.

It appears to us that the weak point which is common to all classes of Friendly Societies is the uncertainty which prevails as to the proper rates of premium which should be charged for the various classes of benefits which they promise. We have already drawn attention to this subject, and have shown that the inadequacy of the premiums is the cause of embarrassment even to some of the highest and best managed societies. To many it is the cause not only of embarrassment, but also of insolvency and ruin. Two methods of checking this evil suggest themselves. Fresh efforts might be made to prepare trustworthy tables adapted to all the various circumstances with which different societies have to deal; or, recourse might be had, more systematically than at present, to *periodical valuations of the assets and liabilities of each society, followed by the necessary corrections of the table of premiums and benefits.* We believe that both of these measures should be adopted. The government should employ competent actuaries to draw up some model tables, which might be commended to the promoters of Friendly Societies, though their adoption should not be made compulsory. It would probably not be long before their value would be recognized; and we may be sure that there would never fail to be persons interested either in existing societies or in the welfare of the classes for whose benefit they are intended, who would take the trouble of comparing the tables and rules of particular societies with the government standard, and of ascertaining how far they were or were not in accordance with them.

(Following this suggestion the comprehensive report by the Chief Registrar was published in 1880, with tables of rates, etc. In 1896 followed the elaborate report by Mr. Sutton, Actuary to the office of Chief Registrar.—Landis.)

We attach, however, much more importance to properly conducted periodical valuations, and to corrections made from time to time in the tables according to the results of those valuations, than to the original tables themselves; and we consider that such valuations should be made compulsory upon all registered societies. Two difficulties at present discourage many societies from having recourse to them, though all persons conversant with the subject agree as to their utility and importance. The first difficulty is the costliness of the process; the second the uncertainty of the results arrived at by different actuaries proceeding on different principles. Both these difficulties might be, to a great extent, obviated, if model forms, not only of tables, but also of valuations, were prepared under the direction of the government. With these, and with the aid of well arranged returns, which the society would have to furnish, valuations might be conducted cheaply, and on a uniform principle. Perhaps it would be well that the government should in the case of the first valuation of any society allow it to call in the services of the government valuer free of charge. For subsequent valuations a small fee should be demanded.

It is only possible to give a brief outline of the changes effected by the great Act of 1875. By this Act the law relating to Friendly Societies was both consolidated and amended.

The following provisions of the Act may be mentioned as among the most important:

(1) The maintenance of the voluntary principle, as respects registration and the actuarial certification of tables.

(2) The continuance of the quinquennial and annual returns.

(3) The limitation of benefits, especially for infants' assurances, this provision also applying to industrial assurance companies.

(4) The authorizing of the treasury to issue regulations from time to time, and the power conferred on the registrars to appoint inspectors, when duly requested, to inquire into the management of societies, and call general meetings of the members.

(5) *The compulsory valuation of all registered societies every five years, and the provision for the appointment of public valuers by the treasury, who might undertake such valuation.*

(6) The reconstruction of the Registry Office, resulting in the appointment of an actuary to the registrar.

A few amending Acts, of very little importance, were passed during the twenty-one years from 1875 to 1896. In the latter year a thorough revision was made of laws affecting Friendly Societies, which is known as the Friendly Societies Act, August 7, 1896, and which (with a few minor changes) remains in force and effect at this writing).

The Act of 1896 was the most important since the first one in 1793. Its detailed provisions are well worth careful study.

In 1911 the Parliament of Great Britain enacted a general law, a scheme for National Insurance of the working men and women of that country. The scheme so nearly duplicates the plans of Friendly Societies in the way of granting benefits that a mutual arrangement for cooperation was made between the government and the Societies "approved" by the Commissioners. Whether or not the final outcome will be exclusive compulsory State Insurance to the absorption or dissolution of Friendly Societies as independent organizations is a mooted question. Well informed and experienced officials of the societies are pessimistic in their forecasts of the future. The relations between the government and the societies are complicated and as yet unsettled, but it is to be hoped that these great Provident Institutions may be able to continue their beneficent work by granting additional protection to the comparatively small benefits allowed under the National Insurance Act.

FRATERNAL BENEFICIARY ORDERS.

The Fraternal Beneficiary Associations in the United States and Canada were modeled on the pattern of Fraternal Orders with secret work a dominating feature. There was a central authority (usually assuming the name of "Supreme"); and subject to central supervision; there were subordinate bodies with authority circumscribed to a State or "Jurisdiction," (usually assuming the name of "Grand"); and, subject to dispensation and regulation from the "Supreme" or "Grand" jurisdictions, there were local "Lodges," or "Councils," or "Camps," or "Tents," or other designation characteristic of the organization.

The words quoted from Hardwick, written sixty years ago concerning the early Friendly Societies, apply to the Fraternal Beneficiary Societies as they existed in this country.

"The singularity of some of their names, the secrecy, the mummery, and the mystery which attended their proceedings, proved peculiarly attractive to the great body of the operative population, while they at the same time excited the distrust, the suspicion, and sometimes the ridicule of the wealthier and better educated portions of society."

The local lodges, or councils, or by whatever name known, usually provided some form of relief to living members, while the grand or supreme bodies issued certificates promising a death benefit "not to exceed" the amount of one assessment upon all of

the members, or the amount of one assessment "not to exceed" a designated sum varying from \$500 to \$5,000.

The Ancient Order of United Workmen, the American Legion of Honor, the Knights of Honor, the Knights of the Maccabees, the Catholic Mutual Benefit Association, the Catholic Knights of America—in fact, all of the original and well known societies in the United States and Canada—levied a level and uniform assessment, regardless of age, occupation, or residence, and with meagre restrictions upon health, basing the number of assessments upon the claims incurred and collecting them from the survivors after deaths were reported.

The certificate of membership had neither the form nor design of a contract of insurance.

The promise to pay a sum at the death of a member, not in excess of the voluntary contributions of survivors, was not made in the way of a binding financial obligation, but rather in satisfaction of the law of social benevolence which requires that every man shall endeavor to assist others.

The limitation of the money benefit to the contributions that might be received for its payment placed the transaction in the category of a charity. In these circumstances it gave little concern to the officials of large societies when the original and simple form of certificate of membership was changed to bond-like appearance and with the maximum possible amount of benefit largely displayed in gilt letters.

The effect upon the holder was an assurance of a definite sum payable at death, and the development finally was to produce an insurance contract of a fixed character enforceable at law.

However, the members changed their conceptions of fraternal protection only in respect of the benefit side of the contract. They continued to regard the contribution side as demanding nothing more than voluntary donations in the way of charity.

Until about 1888 (nearly 100 years after the first Friendly Society Act) legislators placed the Fraternal Beneficiary Associations in the list with charitable organizations and did not undertake to regulate or supervise them, contenting themselves, when occasionally moved to action, with restrictive measures that limited their scope of operation, or exempted them altogether.

Insurance Commissioners paid little or no attention to the Fraternal Orders, treating them as without the realm of life insurance organizations—and, indeed, holding that they would be encroaching upon the rights and privileges of the life companies were they to issue life insurance contracts with mathematically determined rates of contribution.

In this connection is given a recent ruling of the Commissioner of Internal Revenue, which reflected the prevailing opinion held by officials in the executive and judicial departments of State and National governments of the Union. While passing upon the question of the taxation of policies, Commissioner Wilson discusses the question of profit, and addresses himself to what is contemplated by the phrase "organized and conducted not for profit." He says, in part:

An association coming within the exempted classes which is organized and does business on the plan of levying a sum upon its members to pay losses, or losses and expenses, as incurred, is *prima facie* not doing business for profit. This is in case where the assessments are made to provide for the payment of losses as they occur.

Such companies as make assessments based upon fixed premiums, to be collected at regular intervals, without regard to whether or not a loss actually occurs, are companies that are, in the opinion of this office, *prima facie* conducted for profit.

Progress toward permanency would be forever blocked were such an opinion to take control of legislatures. Only ignorance of insurance principles and a wrong

conception of fraternal protection can excuse such an opinion. A still more exaggerated case is the following from a decision by the Supreme Court of Pennsylvania:

The first specification charges error in admitting the application thus referred to. This is grounded on the assumption that defendant (the A. O. U. W.) is an Insurance Company, and the contract sued on is a contract of assurance on the part of the plaintiff's husband for her benefit. . . . Such assumption, however, is unwarranted. The defendant is NOT AN INSURANCE COMPANY, but belongs to the distinctly recognized class of organizations known as benevolent organizations. . . . What is known as a BENEVOLENT ORGANIZATION, however, has a wholly different object and purpose in view. The great underlying purpose of the organization is not to indemnify or secure against loss; its design is to accumulate a fund from the contributions of its members for "Beneficial or Protective purposes," to be used in their own aid or relief, in the misfortunes of sickness, injury or death. The benefits, although secured by contracts, and for that reason to a limited extent assimilated to the proceeds of insurance, are not so considered. Such societies are rather of a PHILANTHROPIC OR BENEVOLENT CHARACTER; their beneficial features may be of a narrow or restricted character; the motives of the members may be, to some extent, selfish; but the principle upon which they rest is founded in the considerations mentioned. These benefits, by the rule of their organizations, are payable to their own unfortunates out of funds which the members themselves have contributed for the purpose, NOT AS AN INDEMNITY OR SECURITY AGAINST LOSS, but as a PROTECTIVE RELIEF in case of sickness or injury, or to provide the means of a decent burial in the event of death. Such societies have no capital stock. They yield no profit, and their contracts, although beneficial and protective, altogether exclude the idea of insurance, or of indemnity, or of securing against loss.

The original idea of benevolence and charity still prevails and the legal status of Fraternal, Beneficiary Societies is by no means settled. Court decisions are conflicting, but fortunately uniformity in State legislation is making rapid progress, and the day is not distant when the business of these Associations will be conducted upon safe and sound methods under supervision wisely designed for the good of all concerned.

It takes time and patient nursing to cure an ailment such as afflicted the Fraternal Beneficiary Societies.

Consider their origin and one cannot be surprised at the resulting financial difficulties in which they became involved.

Why should these Societies have been considered to assume any deferred financial obligation when the outstanding promise was to pay as a benefit the sum of one assessment, *provided* it did not exceed a stated amount?

Such a promise could be fulfilled on the payment of one dollar, *if* that were the amount of one assessment.

Why should such Societies accumulate funds as a guarantee for the settlement of deferred liabilities in the way of future death claims? They have the right to levy an unlimited number of assessments. If one assessment will not satisfy the matured claims, they can levy another. If still unsatisfied, they can levy another and another until the claims are paid, or until dissolution results from withdrawals.

There was never a simpler scheme for the liquidation of liabilities!

Its simplicity is not altogether in the power of repeated levies!

If the assessments produce no funds, that fact discharges the debt!

From the viewpoint of the analyst, the *post mortem* plan of assessments-as-needed is a perfect scheme for financing a concern on Hope.

But Hope is the greatest of flatterers, and thousands have been allured by her prodigal promises and plausible presentations ultimately to find they had no other possession but Hope, and finally to realize nothing but Despair.

It is a sad commentary upon the progress of the human race that good men with good intentions so often will adopt defective means for the execution of good purposes.

And more regrettable is the fact of the *repetition*, generation after generation, of defective means for good purposes, ending in failure.

Probably most regrettable of all is that the trained minds of judges and legislators go far astray in their analysis and conception of unsound plans of life insurance—notably the learned Justices of the Court of Appeals of the Great State of New York.

For a long time neither the managers nor the members of Fraternal Beneficiary Societies, nor the courts, nor the legislatures seemed able to distinguish between the *fraternal* and the *business* side of these Associations, notwithstanding the fact that the managers were construing and the members holding the certificates as insurance contracts with fixed benefits.

There was and is an honest conviction, not readily surrendered, that fraternal co-operation relieves societies from the business necessity of demanding contributions equivalent in value to the benefits promised, and from being assessed according to the insurance risk assumed.

At this time one of the greatest of our American Fraternal Beneficiary Societies is in a struggle with its members and the courts to determine the question of adequate contribution rates, and whether or not they can be enforced against members who relinquish not a dollar in their demand for protection to the full face value of their certificates.

Proof beyond dispute is submitted to show that some members contribute to the funds less than the actual costs of their protection, and that the deficiencies thus created must be made good by appropriations from the contributions of other members who pay in excess of the equitable costs of their protection.

Notwithstanding this undisputed fact, the members, who receive benefit for which they do not pay its full worth, contend that it is a condition incident to fraternal co-operation for mutual protection.

They believe, or pretend to believe, that it is consistent with brotherly and fraternal conduct to solicit persons to join these Societies and then charge them in excess of the costs of their protection, and to appropriate such excess to their own benefit.

Hundreds and hundreds of times I have stood before conventions and gatherings of fraternal people and demonstrated from the actual experience of the Society, to whose members I was talking, that some of those present were contributing less than half of what it cost the Society to carry the risk of their insurance benefit, and that the Society's loss on them was made up from surplus contributions of others. I have explained the inequity of such procedure. I have pointed out that it is not different in principle to appropriate from a common trust fund an unequal share of purchased articles—as might be the case in a co-operative store where some would pay less than the cost of what they bought, while others would be over-charged. I have put the question directly to my auditors, whether or not, if they were contributors to the funds of a co-operative store, they would support and continue a management which let some members have groceries at 50% of the cost and charged others 150%. I have never yet had any one defend such a plan of management for a cooperative store, or for a savings bank where deposits of one were paid out to another, even when it was assumed that those questioned were the persons to be benefited. Nevertheless, I have heard some of the same people vigorously and eloquently defend the insurance plan of fraternal orders under which members were

charged more than their equitable proportion in order that others might pay less than their equitable proportion of the common cost of insurance protection to the whole membership.

The argument in defense was that such had been the original conception of fraternal co-operation for mutual insurance protection;

That to change the plan after a number of years of operating under it would impose upon the old members, and "freeze out" the aged who had "borne the heat and burden of the day" when personal work and sacrifice were required for the Society's very existence;

That the younger members of today must, in their turn, make sacrifices in the way of contributions toward the cost of protection for those who had grown grey in the service;

That while it would be unfair and unjust and probably dishonest to overcharge one patron of a co-operative store in order that another might have his purchase at less than cost, and while it certainly would be dishonest to take from the savings account of recent and young depositors in a savings bank for overpayment to aged patrons because they had lost their earning power and needed the money, and while it would be wrong to permit a regular life insurance company to charge some more and others less than their equitable share for insurance cost, yet the reason that it would be unfair and unjust or dishonest, or wrong in these instances, was because it was not the original nor recognized plan for the operation of co-operative stores, or savings banks, or life companies, and therefore they were not to be compared with Fraternal Beneficiary Societies which were and should be altruistic in their practices and charitable in their purposes and altogether benevolent in the distribution of funds;

That there was no distinction between members in respect of individual share in the costs of protection, because each member contributed toward a common fund from which claims for benefits were paid, and no member had any individual interest in or right to that fund unless in the way of claim for benefit;

That it was never contemplated in fraternal co-operation to resort to the commercial requirement of business conduct by demanding a contribution rate proportionate to the insurance risk, and that such a practice would be as foreign to the intents and purposes of these mutual associations for the relief of the distressed and needy as would be the attempt to fix the amount of donation for each voluntary contributor toward any charity fund.

Fraternal Beneficiary Societies were stamped in the beginning with the character of charitable and benevolent institutions.

As heretofore stated, the members tenaciously insist upon the continuance of that imprint upon their assessment levies, while they have no hesitancy in construing the promise of benefit into a fixed contractual and financial right.

The New York Court of Appeals has rendered opinions sustaining the contention that the contribution rate cannot be adjusted scientifically and equitably to the insurance risk, without the consent of the members, while holding that the members have a vested right to demand the full amount of benefits promised.

The Court concedes that extra assessments may be levied when needed for the payment of matured claims, but the general conclusion is in support of the contention that Fraternal Beneficiary Societies, as at present constituted, are not able to enforce the well-established rule that promised contributions should be adjusted to provide equitably for promised benefits.

Undisputed and unquestioned evidence was presented to the Justices in which it was shown that ultimate failure was inevitable under the plan of operation where the contribution was not adjusted to the cost of protection according to the insurance risk assumed.

It was demonstrated by expert testimony, and proved by the actual experience of societies which had tried it, that recourse to extra assessments could delay but would not prevent ultimate failure and final dissolution, and the sacrifice of the protection of persistent survivors as well as the sacrifice of the protection of those forced out by repeated assessments.

The reply was, that the Court was not responsible for a plan that would result in disaster—that was the concern of those who inaugurated and accepted insurance under the plan—that the Court did not formulate the plan, but merely decided how the plan in practice should be operated consistently with its conditions and provisions, and that the recognized legislative body of the society has not power to change those conditions and provisions even to save the corporate existence and to conserve the interest and carry out the desire of the great majority of the members.

The Justices of the Court of Appeals arrived at the same conclusion as have the members who protest against a change in the existing plan of assessments.

But the Justices came to their conclusion by an entirely different course of reasoning. They construe the certificate as a business contract between a corporation and an individual and exact the letter of the bond; they disregard the contention that the corporation is a fraternal mutual co-operative association of individuals related to each other in the dual capacity of insurer and insured, and therefore are obligated to make proper and adequate provision for the payment of benefits as a condition precedent to making claim for benefit; they proceed to the decision of the dispute between the corporation and a certificate-holder without reference to the fact that the latter is part and parcel of the corporate body and equally responsible with every other member of the corporation for its obligations and the proper provisions for the performances of its promises.

I have presented at length this phase of the Fraternal Society situation because of its obvious difficulties.

We have members contending that it is in accord with fraternal principles and brotherly relations to impose upon young and recent entrants (as long as they will bear) part of the burdens of older members resulting from granting insurance at inadequate contribution rates.

We have courts deciding and commissioners ruling that Fraternal Beneficiary Societies are not Insurance Companies, and do not undertake to indemnify against loss, and therefore must be listed with charitable organizations.

Then we have other and more recent court decisions to the effect that Fraternal Beneficiary Societies are business corporations bound by the letter of their contracts, though the performance kills.

Finally we have the reassuring and more pleasant aspect of legislative enactments by many State Legislatures (that of New York amongst them) wherein the Fraternal Beneficiary Societies are recognized as mutual co-operative insurance associations with the right and power to adjust required contributions to promised benefits in such manner as will render promises possible of performance and preserve corporate existence—and at the same time recognizes them as business corporations with obligations to their members and to the public which demand detailed and public exhibit of financial condition, past, present and prospective.

The development of the Fraternal Orders is strikingly similar to that of the Friendly Societies, which Mr. Hardy summed up in the terse sentence as "being *originally* purely social in character, *subsequently* charitable and mutually protective, and only in *recent times* financial."

Likewise the members of Friendly Societies advanced more rapidly in the appreciation of the financial obligation *to them* from the Societies than *from them* to the Societies.

In his illuminating essay on "Friendly Societies and Sick Clubs," Mr. Reuben Watson, after alluding to the demand by members for the full benefit promised, remarks: "The enquiry by the Royal Commission unquestionably gave an impetus to the newly awakened discovery that the adoption of graduated contribution tables must be consented to in the interest of justice and right. Unfortunately, it is difficult to make such matters clear to the untrained mind, in which there is, however, often much ingenuity. Members of Friendly Societies do not always take kindly to reforms which necessitate exposure of insufficient contribution rates. When proposed reforms carry with them increased contribution rates they have been known to be opposed with unrelaxing vigor, and pet schemes and haphazard promptings have received remarkable support in opposition to the soundest principles."

The concluding sentences have application to the Fraternal Beneficiary Orders in this country.

The opposition in the United States and in Great Britain by members of the Societies to increased contribution rates brought about, in both countries, the expedient of applying increased rates to new members and leaving those for existing members unchanged. This only delayed the day of reckoning.

The gross injustice of collecting from new entrants more for the same benefit than from older members similarly situated in respect of risk at date of entry and appropriating the excess to the use of the older members, finally forced the managements, in both countries, to put aside the excess to the special benefit of the new entrants, and thus establish an adequate rate class.

The option is given to the older members to enter this class—usually without medical examination and often with concessions that rendered the rates for the new class inadequate.

The most frequent, and the most disastrous, option is to permit the older class of members to take the new graduated rates as at age of entry.

This concession repeats the injustice of discriminating between members similarly situated.

The new member, fresh from medical examiner, pays the rate for his present age, say 35, while the re-rated member of present age 35 is given the rate at age 25, because he entered the Society at that age. If the graduated rate is the proper and correct rate at age 35 for the freshly examined member, certainly it is none too low for the member at his present age and ten years removed from medical examination.

The most serious condition confronting American Fraternal Beneficiary Orders has been brought about by re-rating at ages of entry.

In most instances the members concluded, or were led to believe, that the re-adjustment placed the Order in a financially solvent position.

The contribution rates were often those deduced from some recognized table of mortality, with seldom a higher interest assumption than 4%, and these rates were advertised as sufficient upon authority of some actuary.

The advertisement was mainly directed to securing new members. There was omission of the fact that, in respect of members who had entered the Society pre-

vious to a certain date, the adequate rate had been made inadequate, say, for age 25 by being applied to members at 26, 27 ... 30, 35, 40 and, sometimes, 50 years of age; and similarly in the application of other rates at ages advanced beyond those for which they were computed.

Many times the managing officials and consulting actuary have acquiesced in the re-rating at ages of entry, first because it was left to them to accept that or nothing, and second because there was some hope that savings from favorable mortality and gains from interest earnings and forfeitures by lapse, and from the natural recuperative force of these Societies, might overcome the deficiency created by such readjustment. This subject is hereafter discussed in detail.

Altogether and notwithstanding admittedly untoward conditions and existing disadvantages, progress toward solvency by the recognition and adoption of true principles is being made steadily and surely.

Improved prospects are opening up in all directions, whether we view the situation from the standpoint of the managers, or the members, or the insurance commissioners, or the legislators, or the courts.

The requirements of annual valuations are spreading statistical knowledge that gives a better understanding of the relation between promised benefit and required contribution.

Since the agreement at Mobile in 1910 between the Insurance Commissioners and representatives of Fraternal Beneficiary Orders upon a Uniform Bill providing for valuation, there has been acquired more information in regard to the value of deferred promises to pay death and disability benefits than gained during the entire period of operation to that date.

The fact that statutory enactment compels valuation has caused a general inquiry into the meaning and effect of valuation. This subject will be treated at length later on.

LEGISLATION.

The history of legislation affecting Fraternal Beneficiary Societies is so closely identified with the history of the National Fraternal Congress and the Associated Fraternities of America that separation will not be made in references to them.

In pursuance to a resolution adopted in June, 1886, by the Supreme Lodge of the Ancient Order of United Workmen, a committee was appointed composed of Honorable A. L. Levi, of Minneapolis, Minn.; Honorable O. F. Berry, of Carthage, Ill.; Warren Totten, Esq., Barrister, etc., of Woodstock, Ontario, Dominion of Canada, and Honorable Leroy Andrus, of Buffalo, N. Y., to take such action as would bring about a meeting and permanent organization of representatives of Fraternal Beneficiary Societies. The call for such a meeting was issued September 1, 1886, by the Chairman of the Committee, Honorable Leroy Andrus, and on November 16, 1886, the representatives of various Beneficiary Societies of the United States and Canada, responding to the call, met at the Riggs House, in the City of Washington, D. C., on Tuesday at high noon. The following is a list of the Societies and their representatives:

Ancient Order of United Workmen—Leroy Andrus, Buffalo, N. Y.; Warren Totten, Woodstock, Ontario; A. L. Levi, Minneapolis, Minn., and A. L. Berry, Carthage, Ill.

Knights of Honor—W. H. Barnes, San Francisco, Cal.

United Order of Honor—A. W. Wishard, Indianapolis, Ind.

Order United American Mechanics—C. H. Stein, Baltimore, Md.

Order United Friends—O. M. Shedd, Poughkeepsie, N. Y.

Empire Order of Mutual Aid—J. H. Meech, Buffalo, N. Y.

Select Knights, A. O. U. W.—R. C. Hill, Buffalo, N. Y.
 Endowment Rank Knights of Pythias—Halvor Nelson, Washington, D. C.
 Equitable Aid Union—R. N. Seaver, Columbus, Pa.
 Knights of Maccabees—N. S. Boynton, Port Huron, Mich.
 Rayol Arcanum—A. C. Trippe, Baltimore, Md.; J. Haskell Butler, Boston, Mass.
 Knights of Columbus—C. P. Kriezer, New York City.
 Knights Golden Rule—J. D. Irving, Toledo, Ohio.
 United Order of the Golden Cross—A. M. McBath, Washington, D. C.
 Royal Templars of Temperance—C. K. Porter, Buffalo, N. Y.
 Home Circle—J. H. Butler, Boston, Mass.

It was estimated by the Secretary that the orders and their membership represented at the Congress were as follows:

Ancient Order of United Workmen	175,000
Knights of Honor	130,000
Royal Arcanum	70,000
Order of United American Mechanics	40,000
Royal Templars of Temperance	22,000
Equitable Aid Union	17,000
Endowment Rank, Knights of Pythias	16,000
Order of United Friends	12,000
Select Knights, A. O. U. W.	11,000
Knights of Maccabees	11,000
United Order of the Golden Cross	9,000
Empire Order of Mutual Aid	8,000
United Order of Honor	7,000
Knights of the Golden Rule	9,000
Home Circle	5,000
Knights of Columbia	2,000

A grand total of 535,000 carrying insurance to the amount of about \$1,200,000,000.

Very little more was done at this first meeting than to declare its purposes, prescribe the characteristics requisite for eligibility in its membership, elect officers to give it an organization and direct the appointment of several committees for special fields of work. The first officers of the Fraternal Congress were as follows:

President—Leroy Andrus, A. O. U. W.
 First Vice-President—A. H. Barnes, Knights of Honor.
 Second Vice-President—John Haskell Butler, Royal Arcanum.
 Recording Secretary—R. C. Hill, Select Knights.
 Corresponding Secretary—O. M. Shedd, Order United Friends.
 Treasurer—Halvor Nelson, Endowment Rank, Knights of Pythias.

The first regular annual session of the National Fraternal Congress was held at the hall of the Order of United Friends, in Philadelphia, November 15, 1887. At the evening session of the first day the following preamble was read and the resolution adopted:

WHEREAS, There are a large number of Associations, under various names, presenting to the public propositions of various characters, that have arisen since, and are meeting with favorable reception because of the success of the standard legitimate fraternal benefit orders, and while it is not the province of this Congress to either reflect upon or endeavor to retard the growth or prosperity of any organization, yet we deem it a duty to ourselves and the public to define what in our judgment is a Fraternal Society, and to be recognized as such. Therefore, we recommend the adoption of the first resolution amended to read as follows:

Resolved, That a Fraternal Society is an organization working under ritual, holding regular lodge or similar meetings, where the underlying principles are visitation of sick, relief of distress, burial of dead, protection of widows and orphans, education of the orphan, payment of the benefit for temporary or permanent physical disability or death, and where these principles are an obligated duty of all members to be discharged without compensation or pecuniary reward, where the general membership attends to the general business of the order, where a fraternal interest in the

welfare of each other is a duty taught, recognized and practiced as the motive and bond of the organization.

Resolved, That any association, however worthy in business point of view, not possessing the characteristics above mentioned, cannot be legitimately termed a "Fraternal" Society or Order.

The Committee on Legislation reported that there had been no changes in the laws of the several States affecting Fraternal Beneficiary Societies except in Missouri. It was complained that the legislation in that State was entirely in the interest of the assessment Life Insurance Companies and was antagonistic to the people at large who were mainly interested in Beneficial Societies. The committee claimed that "Its effect was to force the thrifty persons of moderate means, who are always the bulwark of a State, to pay excessively for life insurance in the interest of corporations who conduct the business solely for profit, and to deprive them of the privilege and advantage of associating themselves together in the fraternal societies for the benefit of their wives and children. Its animus is plainly shown by a brief review of the law. As a whole it is copied from the Massachusetts Act of Assembly of 1885. The first section of the Massachusetts Act is as follows:

Every contract whereby benefit is to accrue to a party or parties named therein upon the death or physical disability of a person, which benefit is in any degree or manner conditioned upon the collection of an assessment upon persons holding similar contract, shall be deemed a contract of insurance on the assessment plan and the business involving the issuance of such contracts shall be carried on in this commonwealth only by duly organized corporations, which shall be subject to the provisions and requirements of this Act; but nothing herein contained shall be construed as applicable to organizations which conduct their business as fraternal societies on the lodge system or to organizations which do not employ paid agents for soliciting business or limit their certificate holders to a particular order or fraternity or to the employees of a particular order or fraternity or to the employees of a particular town or city, designated firm, business house or corporation or to organizations which are unincorporated and limit the amount of every certificate issued to a maximum amount and not exceeding \$500 on any one risk.

The Missouri Act copies the first section of the Massachusetts law verbatim, but omits the words exempting fraternal beneficial societies from its operation. The omitted words are, "but nothing herein contained shall be construed as applicable to organizations which conduct their business as fraternal societies on the lodge system," etc.

The committee was very bitter in their criticism of the Act and of the Insurance Commissioner of Missouri, because of the fact that the fraternal societies were not exempted from the law.

Chairman A. C. Trippe, of the Royal Arcanum, was very eloquent in his representations concerning fraternal beneficial societies. I quote:

The Beneficial Societies are Societies of the people. They are born of economy, thrift and domestic love; they are the safeguards of the industrious and the honest middle classes, and they are protests against the demands of corporations organized solely for the purpose of gain, which in their excessive demands debar the man of moderate means from making reasonable provisions for his household upon his death. He who strikes at them strikes at the spirit of the age.

They are and always have been honestly administered, and the provisions of this law under their system it is impossible to comply with. No pretense that it was enacted in the interest of their membership will deceive them. They have not asked for such a law; they do not want it. The assessment life insurance companies want

such a law to injure the beneficial societies. They got it. The people of Missouri and of the country want to know why the Insurance Commissioner of that State is favoring legislation and corporations which compel the people to pay \$3.00 of their hard-earned money for life insurance, when under the economies and advantages of fraternal societies, which eliminate individual and corporate profit from their system, they can make equal provision at a cost of one-third of that sum for their wives and children.

We invite all of the beneficial orders to unite in some common plan to meet the emergency. We have no contest with life insurance organizations. We do not belong to them in principle or in practice. We do not intend that they shall injure us, or wrest a department of State government instituted for the protection of the people to their injury.

The second annual session of the National Fraternal Congress was held in New York City in November, 1888. The Committee on Legislation reported that during the year 1887-1888 legislation adverse to fraternal societies had been attempted in the Dominion of Canada and in the State of Maryland. I quote from the report:

The attempt of the Insurance Commissioner of Missouri to destroy the Fraternal Orders has been foiled as yet by adverse judicial decision, and the near approach of the session of the Legislature encourages the hope that the sacred interests which are at stake may obtain remedy of the wrong by proper legislation. In the Dominion of Canada a very complex law was submitted at the last session of Parliament. But amid its intricacies it was possible to see both the spirit of animosity to the Fraternal Societies and legislative provisions which would maim and destroy them. Through the energy and fidelity of Brother Totten, our Vice-President, assisted by officers of other Orders, this legislation was prevented.

In Maryland the Mutual Cooperative Societies were seized with a horror of what was called the conduct of the Industrial Insurance organizations, which it is charged are societies that collect their dues, generally five cents per week, of members at the back gate. So they started to reform them by Act of the Legislature, requiring a deposit, etc. It was stated in the bill that the Royal Arcanum and the other leading Fraternal Societies were excepted from the provisions of the Act. It was also stated to prominent members of the Fraternal Societies that there were already too many Orders, and it was well to limit their multiplication, and so the exemption in the law was made to include such Fraternal Societies as were organized on February 1, 1888. The contest was waged with great activity for some time between the Cooperative and Industrial Orders, and a bill was finally passed to its third reading, which contained the foregoing provisions. Upon inspection it was found that this bill, in its apparently innocent provisions, contained an admission of the right of the Insurance Department to control the Fraternal Orders, and the repeal of a date would confirm that control permanently. Prompt steps were taken, the bill withdrawn, amended and passed in accordance with the views of our membership.

The fourth annual session of the National Fraternal Congress was held in Pittsburgh, November, 1890, and the President in his address used the following language:

There is another question that I will call to your attention and one that I deem of vital importance. How are we to protect ourselves from the many fraudulent organizations that are flooding the country under the garb and cloak of fraternity? We should carefully consider this question as one of deep importance. While we should not do anything to injure in any way any legitimate business or avocation, we should expose fraud and counterfeits wherever found and denounce them in no uncertain terms. Whether or not it would be wise to invoke legislation against such I am not prepared to say, but something should be done to rid the country of the pirates who are robbing the people under the guise of fraternity.

A bill was drafted in 1888 for the purpose of securing uniform legislation and substantially was enacted into law by Massachusetts. This legislation is fully re-

viewed by the Committee on Legislation at the third session of the National Fraternal Congress. At the fourth session of the Congress, Honorable John Haskell Butler reported that the only legislation that had been enacted in the country was an amendment in 1890 to the statute of 1888 by the Legislature of Massachusetts, whereby Sections 6, 9, 10, 11 and 12, referred to on page 25 of the proceedings of the Congress of the third annual session, were amended as follows:

SECTION 8. Any corporation duly organized as aforesaid, which does not employ paid agents in soliciting or procuring business other than in the preliminary organization of local branches, and which conducts its business as a fraternal society on the lodge system, or limits its certificate holders to a particular order, class or fraternity, or to the employees of a particular town or city, designated firm, business house or corporation, may provide in its by-laws for the payment, from time to time as required, of a fixed sum by each member, and from this income may make weekly or other payments to any member during a period of disability of such member, or pay a benefit to the member or his family at the end of such period of time as shall be fixed by said by-laws and written in the benefit certificate issued to said member; provided, that the sum paid as sick benefits to a member may be deducted from the total amount to become due at the maturity of the certificate. The money derived from assessments as set forth in this section shall be divided into two funds as follows: not exceeding 50 per cent shall be set aside as a reserve fund for the exclusive payment of matured endowment certificates; the residue from each assessment shall be placed in a benefit fund to be applied exclusively to the payment of disability benefits, and no portion of the money received from assessments shall be devoted to or used for any other purpose, or carried to any other fund than as herein provided. No portion of said securities shall be drawn except upon a requisition signed by three-fourths of the Executive Committee, or other officers corresponding thereto, and endorsed by the Insurance Commissioner, setting forth that the same is to be used for the purposes of the trust; provided, that any such corporation within a period of three months preceding the date of maturity of endowment certificates may make any necessary assessments to enable it to meet such obligations, and carry the entire amount received upon such assessments to the reserve fund; provided, further, that any such corporation which pays death benefits may make assessments therefor, and may hold at any one time, as a death fund belonging to the beneficiaries of anticipated deceased members, an amount not exceeding one assessment from a general or unlimited membership, or an amount not exceeding in the aggregate one assessment from each limited class or division of its members.

SECTION 9. Any corporation organized under or conducting its business in accordance with the provisions of this Act, which does not pay a benefit to a member or his family at the end of a fixed period of time, may provide in its by-laws for the payment, from time to time as required, of a fixed sum by each member, to be paid to the beneficiaries of deceased members in such amount and manner as shall be fixed by said by-laws and written in the benefit certificate issued to said member, and payable to the husband, wife, affianced husband, affianced wife, relatives of, or persons dependent upon, such member. Any such corporation may hold as a death fund belonging to the beneficiaries of anticipated deceased members an amount not exceeding five assessments from a general or unlimited membership, or an amount not exceeding in the aggregate five assessments from each limited class or division of its members. Such fund, if not exceeding one assessment as aforesaid, while held in trust, shall be invested in securities in which insurance companies are allowed by law to invest their capital, or deposited in safe banking institutions subject to sight drafts for distribution to the beneficiaries aforesaid. The amount of such fund in excess of one assessment shall be deemed an emergency fund and shall be invested in securities in which Insurance Companies are allowed by law to invest their capital, or not exceeding 20 per cent thereof in a building for use and occupancy by the corporation as its home office within this commonwealth; and such securities shall be deposited in trust with the Treasurer of the Commonwealth. Such corporation may also provide in its by-laws for the payment from time to time of a fixed sum by each member, and from the amount thus received may make weekly or other payments to member during a period of disability. This fund shall be used for no other purpose than herein prescribed, and no assessment therefor shall be called while there remains on hand

of such fund an amount equal to that received from one assessment. No contract under this section shall be valid or legal which shall be conditional upon an agreement or understanding that the beneficiary shall pay the dues and assessments or either of them.

SECTION 10. Any corporation organized under or conducting its business in accordance with the provisions of this Act, and which has no per capita tax, may make not exceeding three assessments per year to meet its reasonably necessary expenses. The purpose of such assessment shall be clearly stated in calls therefor, and no assessments shall be called while the amount of one assessment remains on hand.

SECTION 11. Fraternal beneficiary corporations, associations or societies organized under the laws of another State, not transacting in this Commonwealth business as herein defined, may continue such business upon the plans heretofore governing them, as reported to the Insurance Department, and by otherwise conforming to the provisions of this Act.

SECTION 12. Every corporation doing business under the foregoing provisions shall annually, on or before the first day of March in each year, report to the Insurance Commissioner the location of its principal office, in this Commonwealth, and the names and addresses of its President, Secretary and Treasurer, or other officers answering thereto; and shall make, under oath, such statements of its membership and financial transactions for the year ending on the preceding thirty-first day of December, with other information relating thereto, as said Commissioner may deem necessary to a proper exhibit of its business and standing; and the Commissioner may at other times require any further sworn statement he may deem necessary relating to any such corporation.

Any fraternal beneficiary organization incorporated under Chapter 429 of the Acts of the year 1888, or existing under the laws of this Commonwealth and transacting business as defined in said chapter and amendments thereto, may provide in the same assessment for its disability and death funds; provided, that the proportion of the assessment to be used for either purpose shall be distinctly stated as well as the amount received for each fund held and used in the manner provided therefor by law.

Having in mind the fact that Chairman Butler ranked as one of the leading lawyers of Boston, his concluding paragraph is interesting:

Your committee feels assured, more by reason of signs in the air rather than by any definite information on the subject, that the old line insurance companies are quietly endeavoring in various States to secure legislation which shall hamper the work of the fraternal organizations. Their agents profess, publicly and in private, their belief that our associations have been of inestimable benefit to the business of the old companies, and that they prefer that they should exist rather than that anything should be done to interfere with their work. Nevertheless we cannot avoid the conclusion that wherever, without their ostensible action, adverse legislation can be secured, it will be quietly done. It therefore is of the utmost importance that fraternal men, members of fraternal orders in all the States, should keep a continual and sharp watch upon the Legislatures when in session, and have some member favorable to our interests whose duty it shall be to inspect every bill bearing upon life insurance subjects and taxation, with a view to prevent restricting legislation. It would seem as if all which remains for your committee to recommend is that their successors shall keep on in the work mapped out for them by the Congress and so far as possible protect the interests of the fraternal organizations by watchfulness and advice.

I have quoted at length from the important provisions of the Massachusetts statute, because it was taken as a model form by a number of other States, and because it was the first extended legislative enactment concerning Fraternal Beneficiary Societies. The provision for the payment of endowments and the limitation of the amount of funds to the amount of five (Section 8) or one (Section 9) assessments are noteworthy features.

The interpretation of the Certificates of Fraternal Beneficiary Societies by the Courts usually is made upon the determination of their legal status and therefore it is

of the utmost importance that careful study be made of the history of legislation. On account of the numerous legislative bodies having to do with insurance organizations it is not within the limits of space which can be devoted to the subject to make a thorough review of laws enacted from year to year. Since 1888 virtually was the beginning of State legislation for the regulation and control of these Societies, and by 1890 State supervision had become a definite policy, I believe it well to give a synopsis as of that year—1890.

As stated the sections above quoted were the important provisions in the Massachusetts statute. Others were as follows:

First.—That seven or more persons, citizens of that Commonwealth, might form a fraternal beneficiary corporation and the manner of the organization is provided for.

Second.—There is a definition of the nature of the corporation and its operation.

Third.—Fraternal Beneficiary Associations organized under the laws of another State, but transacting business in Massachusetts, shall report on the request of the Commissioner.

Fourth.—The report is required to be made on or before the 1st of March each year, giving amongst other specified information a statement of its membership and financial transaction up to December 31, preceding.

Fifth.—It provides for the appointment of the Insurance Commissioner as the attorney upon whom process is to be levied.

Sixth.—Corporations not then in the State were excluded therefrom. No provision is made for their admission.

There was no general law in Canada for the regulation and supervision of Fraternal Beneficiary Societies, and the exemption clause to the general insurance Act was as follows:

Neither the consolidated insurance Act (1877) nor this Act shall apply to any society or association of persons for fraternal, benevolent, industrial or religious purposes. Among which purposes shall be the assurance of the lives of members thereof exclusively; or to any association for the purpose of life assurance formed in connection with such society or organization and exclusively from its members, and insuring the lives of such members exclusively.

There were no general statutes for the regulation or supervision of Fraternal Beneficiary Societies in Alabama, Colorado, Connecticut, Delaware, Georgia, Illinois, Indiana, Kansas, Kentucky, Maryland, Michigan, Minnesota, Missouri, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Virginia and West Virginia. As in Canada there were exemption clauses to the general insurance laws, and I quote that for Illinois as a representative provision for the States named:

Provided, that nothing herein contained shall be held to apply to any organization of a truly social, religious or benevolent character, where no commissions are paid and no salaried officers or agents are employed, nor to any local association or society organized under or subject to the control of a Grand or Supreme body, nor to any secret organization having subordinate lodges or councils which has been organized under the laws of this or any other State, and which is now permitted to do business in this State.

There were no laws concerning Fraternal Beneficiary Societies in the States of California, Dakota, District of Columbia, Mississippi, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Tennessee, Utah, Washington and Wyoming. There was in 1890 a law pending in New Hampshire.

In Florida, South Carolina, Vermont and Montana, there were no laws, exemption

or otherwise, relating to fraternal societies, but there had been department ruling making the general insurance laws applicable to fraternal.

In Maine, Massachusetts, Nebraska, New York and Wisconsin there were special laws concerning Fraternal Beneficiary Societies. The Maine law was similar to that in Massachusetts heretofore quoted.

The Maine law of 1890 defines the business of Fraternal Beneficiary Associations as follows:

Any corporation duly organized as aforesaid, and which does not employ paid agents in soliciting and procuring business, other than in the preliminary organization of local branches, and which conducts its business as a fraternal society, on the lodge system, or limits its certificate holders to a particular order, class or fraternity, or to the employees of a particular town or city, designated firm, business house, or corporation, may provide in its by-laws for the payment from time to time, of a fixed sum by each member, and from this income may make weekly or other payments to each member during the period of disability of such member. Such corporation may also provide in its by-laws for the payment from time to time of a fixed sum by each member, to be paid to the beneficiaries of deceased members in such amount and manner as shall be fixed by said by-laws and written in the benefit certificate issued to such member, and payable to the husband, wife, children, relatives of, or persons dependent upon such member; but no contract under this Act shall be valid or legal which shall be conditional upon an agreement or understanding that the beneficiary shall pay the dues and assessments, or either of them, for said member.

It also provides that Masonic and Odd Fellows' Associations within the State may employ paid agents in soliciting business, said agents to be licensed by the Insurance Commissioner; provides that such corporation may hold as a death fund an amount not exceeding one assessment; provides that the fraternal beneficiary corporations, associations or societies, organized under the laws of another State, and now transacting business as herein defined in this State, and which now report, or which shall report when requested, to the Insurance Department, may continue such business without incorporating under this Act. Fraternal beneficiary corporations or societies, not now transacting business in this State, which may hereafter desire to do so, must first obtain a license therefor from the Insurance Commissioner, and shall furnish him a copy of its by-laws, with a statement showing its membership and financial condition, and such other information as he deems necessary. It requires each society or association to report annually on or before the first day of April (March, in Massachusetts) to the Insurance Commissioner the names and addresses of its President, Secretary and Treasurer, and shall make such further statements of its membership and financial transactions for the year ending the 31st day of December, as may be necessary, for the proper exhibit of its business and standing; provides for the punishment of any person who assists in procuring membership in any society not doing business as authorized in this Act. It is provided that the benefit shall not be liable to trustee or garnishee process, and shall not be taken or appropriated for any debt of the certificate holder or beneficiary.

The general insurance statute of Maine, regulating business and assessment insurance associations, provides "that nothing herein contained shall be construed as applicable to organizations which conduct their business as fraternal societies on the lodge system."

The New York law defines Fraternal Orders as follows:

First.—Section 6. All Beneficiary Societies, Orders or Associations, whether voluntary or incorporated under the laws of this State, or any other State or Territory of the United States or of the District of Columbia, the members of which are composed, elected and initiated in subordinate lodges or councils or other bodies, by

whatsoever other name known, according to the constitution, laws, rules, regulations, rites and ceremonies of such societies, orders or associations respectively, now existing in this State or which may be hereafter instituted or organized in this State, or authorized to do business in this State, are hereby declared to be mutual benefit fraternities, and exempt from the provisions of the insurance laws of this State, and shall be subject only to the provisions of this Act.

Second.—It further provides that any number of persons, not less than nine residents of the State of New York, desiring to form a Fraternal Beneficiary Society, Order or Association for the relief of members or beneficiaries, shall file in the office of the Superintendent of the Insurance Department a declaration signed by each of the incorporators, setting forth its name, mode of operation and names of officers, and upon certificate of the Attorney General, that the law has been complied with, and upon the Insurance Commissioner being satisfied that there are 200 subscribers whose benefits aggregate \$400,000, and that one assessment amounting to, at least, 1 per cent thereof has been paid in full in cash, then he shall issue his certificate and license authorizing the society to transact its affairs.

Third.—It provides for the reincorporation of orders already existing, and that no foreign corporation shall do business in the State until it has filed the certificate as above, and the Insurance Commissioner may revoke the certificate when the membership falls below 200 with representing benefits aggregating \$400,000.

Fourth.—The Society shall have power to make its own Constitution and Laws, not inconsistent with the Constitution and Laws of New York State, or of the United States.

Fifth.—Section 8. Such Fraternal Beneficiary Societies, Orders or Associations, may make such promise or agreement with their members for the payment of benefits to a member, or others dependent upon him, or beneficiary designated by him, as may be provided by the Constitution, Laws, Rules and Regulations of such Fraternal Beneficiary Societies, Orders or Associations respectively, subject to a compliance therewith by the member, provided that no such Fraternal Beneficiary Society, Order or Association shall issue any certificate or make any promise or agreement, express or implied, for the payment of any greater sum of money than one assessment upon all its members will realize, at the time of issuing such certificate or making such promise or agreement.

Sixth.—Section 9. Such Fraternal Societies, Orders or Associations may derive such money or such benefit, charity, relief or aid fund from voluntary donations, or from admission fees, dues and assessments collected, or to be collected from members thereof, in manner and form as may be provided by the Constitution, Laws, Rules and Regulations of such Societies, Orders or Associations respectively, but no such Society or Officer thereof shall use any money collected or received for the payment of beneficiary claims, for any other purpose.

Seventh.—It provides also that all such Societies, Orders or Associations, together with their books, papers and vouchers, shall be subject to visitation and inspection by the Superintendent of the Insurance Department, or such person or persons as he may at any time designate. Any such Society, Order or Association refusing or neglecting to make such report may, upon the suit of said Superintendent, be enjoined by the Supreme Court from carrying on any business until such report shall be made, and until the costs of such action be paid. Said Superintendent must, within thirty days after failure to make such report, or in case any such Society, Order or Association shall exceed its powers or shall conduct its business fraudulently, or to comply with any of the provisions of this Act, give notice in writing to the Attorney General, who must immediately commence an action against the Society so failing. The annual report to the Superintendent of Insurance shall be in lieu of all other reports required by any other law.

Eighth.—Each notice of assessment shall set forth truly the purpose of such assessment, and what portion or amount thereof, if any, is to be used for the payment of other than beneficiary claims.

Ninth.—Benefits shall not be subject to garnishment.

Tenth.—Any officer, member, agent, solicitor or examining physician of said Society, or any other person who shall knowingly or willfully make any false or fraudulent statement or representation in or with reference to any documentary or other proof for the purpose of obtaining membership in or benefit from any such Society, Order or Association, for himself or any other person, shall be guilty of a misdemeanor.

Eleventh.—Existing Fraternal Societies are made subject to the provisions of this Act, except in its provisions for incorporation and the filing of the certificate, as a condition precedent to beginning operation.

Twelfth.—Nothing in this Act shall be construed to apply to any Corporation, Society or Association carrying on the business of life, health, casualty or accident insurance for the profit or gain, and shall only apply to Fraternal Beneficiary Societies, Orders or Associations, as defined by Section 6.

Thirteenth.—Independent Order of Odd Fellows, Free and Accepted Masons and Knights of Pythias, exclusive of the endowment rank, excepted.

The Law of Wisconsin, as approved April 9, 1889, requires a report similar to that of Massachusetts, to be made, and provides for the appointment of the Insurance Commissioner as attorney, upon whom process against the corporations shall be served. In other respects the Fraternal Societies are not subject to insurance legislation.

The Nebraska statute provides:

Any secret society or association, the management and control of which is confined to the membership of any secret society or order, heretofore organized, or which may hereafter be organized, which in addition to the benevolent and fraternal features thereof, shall also issue certificates of indemnity calling for the payment of a certain sum, known and defined, in case of the death, disability or sickness of any of its members, to the wife, widow, orphan or orphans, or other person dependent upon such members, shall be exempt from the provisions of the law relating to life insurance companies. Provided, that such secret society or association as aforesaid shall comply with all the requirements of this Act.

Within thirty days after the taking effect of this Act such society as aforesaid shall, by its presiding officer or recording officer, or both of them, file a certificate in the office of the Auditor of Public Accounts, setting forth the total number of members in good standing in such Society or Association at the date of the taking effect of this Act, the name, title and postoffice address of each of the chief officers of such Societies or Associations, the plan of assessments upon which funds are provided to pay the certificate of indemnity issued by such Society or Association, together with a certified copy of the constitution and by-laws of such Society. If, from such statements, the Auditor of Public Accounts shall be satisfied that such Society or Association has a sufficient membership to pay a certificate so issued by such Society or Association in case of the death of any of its members by its usual method of assessment, he shall issue to such Society or Association a certificate authorizing it to transact its business for one year.

It then provides for annual reports, which requirement is repealed by the Act of 1889. It further enacts that if at any time the Auditor shall be credibly informed that the membership has fallen below the number sufficient to pay the indemnity, he shall investigate the matter, and, if proven, shall withdraw the certificate.

Before any change in the constitution and by-laws of any such society or corporation shall take effect, a copy of the same shall be filed in the office of the Auditor of Public Accounts.

Money collected for the payment of certificates of indemnity shall be used for no other purpose.

Any person or persons violating the provisions of this Act shall, upon conviction thereof, be imprisoned in the penitentiary for not more than five nor less than one year.

Any officer embezzling or appropriating any of the funds of any such Society to his own use shall be guilty of embezzlement, and upon conviction thereof be punished accordingly.

The Committee on Legislation, in its report to the National Fraternal Congress, referring to the Nebraska and Massachusetts statutes, used the following strong language:

This (Nebraska law) is the most iniquitous Act upon the statute book. The requirement that the certificate must be filed within thirty days after the passage of the Act is evidently intended to ensnare the Orders who in that brief period may never have heard of the law, and it practically excludes all new organizations from doing business in the State.

The proviso that the changes in the laws shall not take effect until a copy has been filed in the Auditor's office is the sublimity of impudence, of arbitrariness and injustice.

Attention is especially called to this law that its provisions may be modified in the interest of fairness, and if the Insurance Department of the State is responsible for its enactment, that department should at once be attacked by the Fraternal Orders, as partisan and tyrannical.

The law of Massachusetts gives too much power to one man. It practically excludes all new orders from entering the State, and in this nineteenth century has built a Chinese wall around the old Commonwealth, and secure behind it, as he thinks, the Insurance Commissioner, interpreting the law, says the words "report when requested," mean that if I do not request them they cannot "report when requested," and cannot come in under the law. That is to say, that the status of every Fraternal Order in the State of Massachusetts depends upon the judgment and whim of the Insurance Commissioner, uncontrolled by, or rather supported by law, whether he will ask it to report or not. This extraordinary interpretation should be looked into and an adverse decision had or the law repealed. No presumed benefit can justify the conference of such power on any man in these days.

The committee, answering the question, Is Legislation Needed? delivered itself as follows:

An analysis of the special laws relating to the Fraternal Societies, which are on the statute books, show us:

That in Nebraska the intention of the legislation was plainly to cripple and drive the Fraternal Orders from the State.

The Missouri law simply relates to the annual reports, while the laws of Massachusetts, Maine and New York include this feature, and declare the mode of incorporation, with some limitations intended to provide for the protection of members. The distinction between the Fraternal Orders and the mutual assessment companies is maintained in these statutes, and this is right, but beyond the provisions for their incorporation, based upon their essential and distinctive features and principles, it is questionable whether the other provision of those Acts are of any practical utility.

What are these provisions intended to protect the membership?

First.—Annual report, Massachusetts, New York, Maine and Wisconsin law.

Second.—Any solicitor, agent or examining physician, knowing or willfully making any false or fraudulent statement or representation, in or with reference to any application for membership, or for the purpose of obtaining any money or benefit in any corporation, etc., shall be guilty of a misdemeanor (Maine, Massachusetts and New York laws). And making it perjury for any person to make a false statement of a material fact under oath in death proofs. (Massachusetts law.)

Third.—No Society shall promise to pay more than one assessment will yield. (New York law.)

Fourth.—The assessment notice shall state specifically its object and what proportion is to be used for other than beneficiary claims. (New York law.)

Fifth.—Defining what constitute beneficiary societies. (New York, Maine and Massachusetts law.)

Sixth.—Declaring misappropriation of funds embezzlement. (Nebraska law.)

Seventh.—Funds not subject to garnishment.

The provision in relation to embezzlement is believed to be covered by the criminal law of all the States.

The especial features of this legislation are prompted by what might occur rather than what the experience of the Orders necessitates, but they are not in any way dependent upon the supervision by the Insurance Departments, which is ingeniously introduced into the Acts. Some of them, notably that relating to garnishment, were included in the old statutes, and it is believed that this provision is the only one that has been of any practical benefit.

The losses of the Orders from the offenses described as constituting misdemeanor and perjury are hardly worthy of mention, and are largely and best provided for by the vigilance and activity of the members.

That a Society shall pay more than one assessment will yield seems rather a matter for the members than for the paternal (*sic*) Commonwealth.

The assessment notices, so far as we are aware, specify distinctly the object of the call.

The definition of a Fraternal Order is an important one, and the distinction between them and Life Insurance Companies of any description should be fully set forth in all legislation likely to affect them.

It is a very remarkable fact that all the legislation on the statute books relating to the Fraternal Societies originated with the Life Insurance Companies, or with the Insurance Departments of the States. It has not come from the members of the Orders or their officers. It is true that some officers of the Fraternal Societies, thinking that an annual report could do no harm and might do good in showing the condition of the several Orders at the time it is made, did not seriously object thereto, but the necessity or right of State supervision of the Fraternal Orders, it is believed, has not been admitted by any one authorized to speak for them.

The reason for this is obvious. A life Insurance Company is a close corporation. Its insured can have no knowledge of its affairs except as it chooses to exhibit them. A Fraternal Order has an argus eye in each of its members, prying into its affairs. Each one is an integral part of the whole, and its workings in all their details are exhibited in the council room, in the Grand and in the Supreme Councils, to a body jealous of its prerogatives and too large to enter into any combination for wrongdoing.

In all the machinery necessary to protect members against fraudulent applications, death claims and misappropriations of funds, the customary provisions of the constitutions and laws of the Orders have proved sufficient, backed as they are by the ordinary criminal laws in the several States.

The submission of the Fraternal Orders to the control of the Insurance Department of any of the States is wrong in principle, and of no benefit to the members of the Orders in practice. The reports are buried and are of as much general use as the census statistics, while the annual reports of the Supreme authorities of the Orders are published for general inspection, and can be obtained, if necessary, by any one.

The assessment notice is the warning voice to the member, bidding him to inquire into the Society's affairs, and it is the only notice that the member ever heeds.

It is wrong in principle, because the distinction is marked and wide between the Fraternal Orders and the Insurance Companies of all kinds. The one is organized with a view to business profit solely. The other is *constituted for benevolent purposes, with the death benefit as an incident to its benevolent features*. The whole motive of operation and the objects of the Insurance Companies are widely divergent from the Fraternal Orders. And with this marked distinction, it is a wrong upon them to break down this barrier, and subject them to the control of a department, organized from an insurance standpoint and in every case where special legislation has been had, may be dependent upon to look at affairs through insurance spectacles.

The Orders today are as honestly conducted in the States where they are exempt from any control as in those States where the insurance authorities have assumed to superintend them. The long array of those States shows that there is no necessity for special legislation. The constitutions of the Orders, and the vigilance of the membership with the ordinary criminal statutes relating to frauds and misdemeanors, have proved a sufficient protection. And the very few instances where offenses have occurred have found the remedy ready and sufficient and do not justify the subjection of the Fraternal Orders to the alien institution of the Insurance Department. These remarks are only intended to include the legislation promoted by those In-

insurance Commissioners who have sought to aggrandize their offices at the expense of the Fraternal Orders, and do not include the honorable and intelligent officials who appreciate the Fraternal Orders, and the distinction between them and the money-making corporations, and who recognize the fact that they are not intelligently subject to their departments.

Your committee are therefore of the opinion that *no legislation subjecting the Fraternal Orders to State control in any way should be permitted to be enacted*. In cases where legislation has already been had, it should be repealed, or a new department, to be called the "Department of the Fraternal Orders," should be created and substituted for the Insurance Department. And the law should provide that the incumbent of said office shall be a member of one of the Fraternal Orders. No man who is not a member of the Benevolent Societies can comprehend, do justice to, or should in any manner be permitted to control the economy of these institutions. That in all legislation relating to Insurance Companies, which by plain expression or by ingenious and subtle wording, might affect such Orders, a clause should be added expressly excluding them from its operation. That the experience of the large majority of the States shows that no legislation is necessary to protect the members of the Orders from their management, but that everywhere the most intelligent and active interest is necessary to protect the Orders from legislation promoted by the Insurance Companies.

Whenever in any State it is advisable to have a special law for the incorporation of the Fraternal Orders, your Committee believe that the New York law is less liable to objection than the others, omitting Section 10, which relates to Supervision by the Insurance Department; amending Sections 2, 3 and 4, so that the application for charter or re-incorporation shall not be made to the Insurance Department, but the certificate shall be filed and the license or charter issued, as is provided for corporations, under the general Incorporation Law of the respective States; and that the certificate of foreign corporations, provided for in Section 5, shall be filed with the Secretary of State, who shall be substituted for the Insurance Department, or Superintendent of Insurance Department, in said section.

Your Committee therefore recommend the adoption of the following resolutions:

Resolved, 1. That the Fraternal Societies be exempted from the provisions of all laws relating to insurance companies, regular or cooperative.

Resolved, 2. That no legislation is needed, unless possibly in some isolated cases, where experience has shown it is advisable to protect the fraternal beneficial orders from Societies not properly fraternal, in States where the distinction is not drawn by present legislation; and this can best be done by a simple clause of exemption.

Resolved, 3. If deemed advisable, under peculiar circumstances, in certain States, the New York law should be used; so amended that the certificate should be filed and the charter or license issued in the manner provided in the general Incorporation Laws of the several States; that no report shall be made to the Insurance Commissioner, but that a new department, to be called the Department of the Fraternal Orders, shall be created in every State where supervision or control of the Fraternal Orders shall for any cause be permitted.

The report of the Committee was unanimously adopted and its resolutions supported without dissent. The members of the Committee were leaders and the delegates to the Congress were the officials—and many of them the founders—of the most important Societies in the United States and Canada. Amongst them were Boynton, Sackett, Nelson, Miller, Harvey, Craig, Hall, Stevens, Savage, Warnock, Shedd, Acker, Shepherd, Irving, Brown, Robson, Wright, Seaver, Shields and Pratt; while on the Committee on Legislation were John Haskell Butler, W. Warne Wilson, John Mulligan, S. A. Will, John Otto, John T. Milburn and M. G. Jeffries.

Should not such men be held as true interpreters of the purpose and character of Fraternal Beneficiary Societies?

We have these men standing as a solid body against legislative regulation and departmental supervision, and, excepting five States, their view is accepted (in 1890) by State Legislatures and Insurance Commissioners. The previous effort to secure

a modicum of legislative control in Missouri had been "foiled" by Court interpretation and decision.

We have these men, twenty years after the A. O. U. W. began business, unanimously declaring that the Fraternal Beneficiary Societies "are constituted for benevolent purposes, with the death benefit as an incident to its benevolent features."

We hear them declaring that "no legislation subjecting the Fraternal Orders to State control, in any way, should be permitted" unless in "isolated cases," and then "this can best be done by a simple clause of exemption."

Commissioner Wilson, of the Internal Revenue Department, and Justices of the Supreme Courts of Pennsylvania, Missouri and Illinois had good authority to support their rulings! Protesting members can quote the fathers to sustain their contentions!

This history should reflect the spirit of the times as it progresses, and to that end I quote from the address of President A. R. Savage, at the fifth annual session of the Congress, held in Washington, D. C., November 10, 1891:

I do not know that history records any instance of so marvelous a development of a charitable, or human, or social principle, so far-reaching in its effects, as that embodied in the constitutions of the Fraternal Orders. Citizens divided in interests, separated by locality, of every tenet in religion, and every shade of political conviction, unknown to each other when enlisted under the white banner of charity, and drawn to each other by the bonds of fraternity, become brothers in spirit and in deed, giving of their substance, as well as of their sympathy, to those upon whom want has fallen, and upon whose pathway the shadow of misfortune is resting.

We began in darkness, but evermore our paths have been tending toward the light. We began in ignorance; we have learned wisdom by sharp and profitable experience. We had no place either upon statute book or in the decisions of the courts. No more had we any recognized position among the varied social forces which surround and control mankind. Courts looked upon us with disparagement; Legislatures with suspicion, and society, as the latest Utopian experiment devised by idealists, perchance to live, and living to die, marking one more of the failures of enthusiastic and unwise men whose hearts felt more grandly than their eyes were permitted to see wisely. But by patience and intelligence, and steadfastly continuing in good works, all this has been changed.

Today, after a little more than twenty-five years, at least one in forty of all the population of our country, including men, women and children, are members of some one or more of these societies, and at least one in ten are their beneficiaries. Should one ask me whether such a plan, built upon such a foundation, was liable to endure, my first answer would be, "nothing in this generation can fail which meets so perfectly the common wants of a common people." This is not the time for a discussion of the theory of fraternal beneficence. That we have assembled here in this Congress is the evidence and proof of our convictions. Before us is the problem, "How may we best improve, amend and modify the details of our work and put into practical shape and operation, the lessons learned in the school of experience?" Each year brings new lessons by which we may profit. We are just beginning to turn the light of philosophy upon our plans, and to tabulate, to analyze and compare. Vital statistics are gradually becoming more and more important to us, and we are learning to rely less upon wild, impetuous, unregulated impulse, either for sustaining existence or promoting growth, and more upon methodic philosophical and wisely directed efforts.

We come into sharp competition with the "old line" insurance companies. We come into competition with the open assessment associations, which have taken in part our form, but have left our substance. We come into competition with Orders which claim to be allied to us, but have neither our form nor our substance. But our field is peculiarly our own, never to be successfully invaded by any competitor, so long as the warfare we wage is only for the widow and the orphan, and not to promote selfish, temporal interests. Let benevolence, and not gain, be our cornerstone, and our building shall stand immortal, eternal. I believe we can in no way so well do ourselves and our Societies the most good, as by declaring in the most emphatic manner our belief in the old "land marks." Let us stand steadfast where this Congress has always

stood, extending the right hand of fellowship to those who build upon such foundation as we have built upon. The most exalted form of fraternal benevolence is that exemplified by men who gather round a common altar and take upon themselves a sacred vow to be faithful unto death to the loved ones, to care for the widow, to lift up the orphan, and relieve the sick and the distressed, and never to make even the form of fraternity a pretense for personal gain.

I also congratulate you upon the fact that, after these many years, merit and not cheapness is becoming the criterion of excellence by which Fraternal Societies are judged.

I think this Congress should adopt some more systematic and efficient method of making its influence felt in legislative halls, when legislation, either favorable or adverse, is under consideration. Notably, in two or three States this last year, dangerous, if not hostile, laws have been enacted which might have been defeated by concerted action. We cannot be too vigilant. There should be a sentinel upon every outpost, and the entire army, when it sleeps, should sleep upon its arms.

Surely the voice of a million and a half of men and women, uttered with force and authority, cannot fail to be heard and heeded by the most obdurate of legislators.

It was noted that the Massachusetts law permitted the payment of endowments by Fraternal Societies. In 1891 began the agitation that resulted in the elimination of such permission from the laws of all the States, excepting the payment of a stated sum as an old-age benefit at age 70. I quote from the proceedings of the Congress:

The President: There being no reports of committees ready to be presented at the present time, the Congress will take up the next matter on the program, to-wit: Subject No. 8, discussion of subject, "Can a Fraternal Society safely transact an endowment business and pay a stated sum at the end of a stated number of years, or sooner in the event of death?" Upon that subject James E. Shepherd has prepared a paper which the Congress will not listen to: (The concluding paragraphs are given.)

Now, what did the founders of the Fraternal Orders start out to do—merely this and nothing more:

To protect the widow and the orphan. In fact, today the benefit fund of one of the oldest and largest Orders is officially known as the "Widows and Orphans' Benefit Fund." Then no man sought any direct personal gain, and the proof of this is that in many of the older Orders only men were admitted to membership, and I call to mind but one Order, organized as far back as 1876, that admitted women to membership. By thus shutting out the wife from membership, he practically could be the beneficiary of no one—his action was free from all else than protection to those dependent on him; it was utterly without selfishness, and justly and fairly stated he was one of a brotherhood that formed and established a fraternity so beneficent, unselfish and single-minded, that it was a practical embodiment and application of the theory of the golden rule.

So patent was this to the honest observer that from very general distrust and unbelief came a change to almost universal commendation. Hon. John K. Tarbox, in 1887, in his annual report to the General Court of Massachusetts, speaking of these Societies, officially endorsed them, saying: "The fit word is one of cordial commendation, aside from the gracious benefits they disburse through their insurance plan; they unite the people in sympathetic association and foster a worthy social spirit."

Under no other plan could these Orders have won the place they hold in the world's regard. Under it came their phenomenal growth and consequent ability to do an unmeasured and almost unmeasurable good.

And now, having briefly set forth the plan of each, I submit my conclusions:

A Fraternal Order cannot safely sell endowments, because—

First.—The plans of the Fraternal Orders and a company selling endowments are dissimilar and irreconcilable.

Second.—An endowment is purely banking and not insurance of any kind.

Third.—Speculation enters into endowments. It is foreign to, and would be fatal to, the fraternal plan.

Fourth.—Fraternal assessment insurance is still in its experimental stage, and there is danger and un wisdom in adding any foreign matter until time shall fully develop

the proper course to remedy and permanently overcome the undesirable things that each year develops to him who does not shut his eyes to the disagreeable.

D. E. Stevens also presented a paper on subject No. 8, and following are excerpts:

Can a Fraternal Society safely transact an endowment business, and pay a stated sum at the end of a stated number of years, or sooner in the event of death?

Life Insurance is indemnity against financial loss by death, and should be based upon the present or prospective productiveness of the person insured.

Endowment Insurance is Term Insurance combined with a compound interest investment.

Tabor, in his "Three Systems," says: "A healthy body, a strong will, an active brain, and a natural aptness for business, are the most productive property in the world. It has been said that when time was young, only two human beings lived on this earth. They lived in a garden, and fig leaves were their clothing. There were no business blocks, no railroads, no banks, no palatial residences, no trade, no commerce, no money, no art, no science, no culture, no material wealth. All of these have since been produced by the brain of man. One generation after another has lived and passed away, each contributing something to what now constitutes the wealth of the world! One hundred years hence every man, woman and child now living will be dead. The exceptions only prove the rule. Man, truly, is very productive, and there is nothing more certain than that he will die."

While under the former conditions there was no such thing as Life Insurance, nor need of it, yet one can readily see how the present condition of things makes necessary Life Insurance.

Endowment Insurance differs quite widely from Life Insurance in many respects. If we take it for granted that the question means, is it safe from a financial or mathematical standpoint for such a Society to transact an endowment business, if the Society be building and equipped with the necessary machinery needful thereto, we answer, Yes.

In answering the first phase of this question in the affirmative, I could do so only upon condition that with the seeming mystery the explanation also go. I think there can be no question as to there being a safe method of conducting an Endowment business. It may be expensive, but it can be made safe, provided the funds are honestly held and faithfully invested by those having them in charge.

To say that as the end of the term of years in which the first Endowments are to mature draws near, that by the extra heavy sums which will be required, a large number of the members will be compelled to lapse their membership, thus swelling the profits of those who remain, is a proposition so uncertain and so at variance with equity, business prudence and the milk of human kindness, that I can scarcely think that any organization would found calculations thereon, much less seriously consider them safe.

Now, without wearying your patience by going into a calculation in further detail, I submit that such a proposition is not (in my judgment) a safe one, unless some alchemist or magician is called upon to assist in the attainment of the promised end.

As many of these so-called Societies pay a mere pittance at death of a member who dies before the end of the Endowment term, their business would more properly be called Tontine Insurance.

Now, there are longer term endowments, which present something more practical, but which, of course, must include a fund sufficient, with accretions from interests and profit from lapsing, to amount to the face of the certificate by the end of the endowment period. The advantage gained in a longer term comes from the fact that these factors have a so much wider field in which to operate, and therefore come to the assistance of the member in a much greater degree than is possible under the short term method. To fix the endowment period at or about the end of probable life is the most favorable plan possible for anything of an endowment nature, for thus, only the veterans who have faithfully and loyally stood by the organization reap a reward, and themselves, in old age, reap it instead of further on, having others benefit by receiving it. In even this class of endowment it must be remembered in the calculation, and we must not lose sight of the fact that they are going to cost more than life insurance payments, and should, therefore, be charged at a different rate.

Now, turning from this phase of the question to that other phase of it, which I cannot feel justified in ignoring in this paper, namely: Can a Fraternal Society safely conduct an endowment business, I am clearly of the opinion that the Fraternal Organization which would keep in spirit and in letter the meaning of the word "Fraternal" in its best sense, cannot safely or otherwise conduct an endowment business, in the usual acceptance of that term. The word "Fraternity" is derived from "Frater," brother, and the word "Fraternity" is defined as a body of men associated for their common interest, business or pleasure—a brotherhood. Hence, where the interest of each lies in the misfortune of the other, or his benefits are to be derived from the failure of his brother in his efforts to do his share, there seems to be something antagonistic to the true spirit of fraternity.

On this subject discussion occurred as follows:

J. A. Hinsey:

I do not think that Fraternal Societies can transact a perfectly safe Endowment business unless the rates, rules and practice of old-line insurance companies are adopted and followed. What is commonly called Endowment Insurance as carried on by the regular companies is certainly not Life Insurance, except that an agreement is made to pay the stipulated sum before maturity in case of death. Investment for the purpose of accumulating money is probably the only term that can be applied to this feature. The same may be said of the numerous building and loan association schemes.

A Society that attaches to its insurance this feature and derives the funds with which to meet matured obligations by assessing the membership must ultimately prove insolvent. It will then be seen that the moneys paid by a number of members have been absorbed by a few. We must therefore assume that when the next policies or another set of certificates mature the increased number and the funds required to cancel them will be correspondingly heavy.

Mr. Jeffries.

I do not wish to say anything on the subject, but I understand that there are now in this body members of an association that are, virtually, paying or promising to pay Endowments. Now, I would like to hear the justification from those Societies for that line of action. I understand Brother Boynton is the champion of that line of insurance, and I would like to hear, for one, what he has got to say on the subject. I would like to hear an explanation of their plan, or their proposed plan, rates, etc., because it may very materially affect the membership of this Association. There are other Societies promising the same thing, and if it can be done, we ought to know it, and we ought to hear the other side. I would like to hear from Brother Boynton, or some other representative of some of the Associations that do, or attempt to transact, that line of business.

Mr. H. H. Morse:

If we could go back twenty-five years we would find that there have been a great many things in connection with Life Insurance that, from our standpoint, have been re-written, and if this question had been propounded to the Fraternal Societies that existed twenty-five years ago, "Can a Fraternal Society safely pay a death benefit?" the probabilities are that there would have been as many and as able papers read to the contrary as have been read upon this subject here today. But in regard to the main proposition as contained in this question, our friend and brother, Mr. Stevens, who read an able paper a few minutes ago, concisely answered the question. Of course it can be done if a sufficient amount is collected for that purpose. Whether a Fraternal Society should engage in any such undertaking is a mere matter of judgment. There are Fraternal Societies of one kind and there are Fraternal Societies of another kind. Fraternal Societies are forming every day, and it does not behoove us to pass judgment in regard to them. It does not devolve upon us to criticize them. If we do not like the kind of Fraternal Societies that are being organized for the purpose of paying endowment benefits, leave them alone.

It may be that some propositions are ridiculous and foolish. In considering this question we must look at it in the light of putting ourselves in the place of those who are members of these organizations and who believe that results will be beneficial

to them from the management of the Association to which they belong. Some of them may be fraudulent, some of them may be vicious, some of them may be of a different character, but the question I want to deal with particularly is the question as to the payment of a disability benefit or an old age benefit, as it is paid in such reputable organizations as the Knights of Maccabees, the Chosen Friends, and other institutions that have existed in this country for the past ten or twelve years and are successful in carrying on their Fraternal work. There is no reason in the world why we cannot successfully treat a fixed period of life as a maturity of certificate providing we put that period so far in advance as to render all questions as to its being a proper period of time. If a man has lived out the allotted time of three score years and ten, if a man has passed beyond the age of his expectancy, if he contributed from time to time as required for the fund necessary to create and pay the benefits that he is to enjoy, there is no reason why, by the very table that you rely upon for the payment of a simple death benefit, that the same result cannot be reached for the payment of a maturity certificate at 70 or 75 years.

Mr. Hall:

I have only a few words to say. There is one question that has not been touched upon—the question of endowment or long period payments—which I think is of interest for us all to consider. Most of these Fraternities who pay a benefit to members at the expectancy, pay but half of the amount of insurance, and the other half remains to be paid as a death benefit. The value which is paid at the time of expiration or on arriving at the age of expectancy is paid in by the member during the time that he has been a member of the Association, and he continues to pay his assessment until the time of death, so that it does not appear to me that there is an Endowment feature, such as we call the Endowment feature when we speak of it in relation to those short period Endowments.

Mr. Boynton:

The great trouble with the speakers who have preceded me is that they are tinctured badly with old line life insurance ideas. I hold that the feature which has been discussed here today as appertaining to the Chosen Friends, the Knights of Maccabees and the other organizations, is not an Endowment feature, and hence don't come in under the objections raised by the members who have discussed this question. We are very apt to use insurance terms in trying to explain our own system. Now, we are not insurance organizations. We do not furnish life insurance. That is—we hadn't ought to say so. (Laughter.) Because the moment that you use those terms that moment you place yourselves on the same plan with life insurance companies. We do not claim to be life insurance companies. The difference between the ordinary life insurance company and fraternal organizations is this: one furnishes life insurance at a profit, and we furnish life protection at cost. That is the difference. It is not insurance. Insurance is a commodity. They come into the market and make all they can from it, and we go into the market for mutual protection, and give it to our members at what it actually costs. There is no question about that. So you see that we get off our base in using such language. There is where the trouble is. We don't want to characterize this 70-year feature as an Endowment feature at all. Nor do we want to admit that we are furnishing life insurance. If you do, you give yourselves away every time. We are giving protection to the widows and the orphans, and nothing more. We are not only furnishing protection to the widows and the orphans as protection, but we are furnishing protection to members while living, and when they reach the age of 70 we extend protection still further. We protect them in their old age by giving them certain benefits. Do you call that Endowment? We give them the money, certainly, but no more than we give the widows the money. You may as well say we are furnishing Endowments for the members when they become physically disabled or reach the age of 70 years. It is not an Endowment at all. And I don't want the members of this Fraternal Congress to get that idea into their heads. If you have got it, get it out as soon as God will let you, and don't allude to it in those terms again. Don't use that expression. I was very much pleased when Brother Shields, who presided over this Congress a year ago, called a member to order when he used the term "life insurance." He said this was not life insurance—it is "life protection." And since that time I have never used the term "insurance" or "Endowment" in any discussion I have had in any of the public meetings I have held throughout

the country. I have avoided it, and urged those in these gatherings to drop those terms entirely, and they have done it, and I tell you we are bounding ahead on the Fraternal field with all sails spread.

That is the reason why I want this Fraternal Congress to open the door to every organization that has that feature in it—that provides fraternity and protection to the member after he reaches 70 years of age as well as when he becomes physically disabled. I do not know that I would particularly object to paying at the expectancy of life, but still it is not as good as fraternity as the other features. (Laughter.) It smacks a little of the speculative—just a little of the speculative—these short-term fellows who pay in two, four, six, seven or eight years, who pay something for nothing. We cannot class them as Fraternities, notwithstanding they have hoisted the Fraternal flag. They are sailing under false colors. They are speculative organizations, and every one who goes into these organizations goes in there for the purpose of making money, and when you and I join the Knights of Honor, Royal Arcanum or the Ancient Order of United Workmen, we do not go in for speculation. We do not expect to make any profits from membership in these organizations, but we want to provide something for those that we leave behind us, and when we go into the Maccabees, the Chosen Friends and other good organizations, they expect to have something when they become physically disabled or reach the age of 70.

Mr. Stevens:

I certainly endorse the doctrine that Brother Boynton has just announced here. I claim that a Fraternal organization can pay a permanent total disability benefit. I claim, as I did in my paper, that it will cost something to do it. It will cost something more to do that than to do the other. I claim that the Order which pays at the age of 70 or 72 or 75, is not paying an Endowment benefit at all to any one. It is simply paying a permanent, total disability claim, and therefore I think it is proper to say that in all I said it had no reference to that principle, because I feel that that is a permanent, total disability payment, and not an Endowment payment.

W. A. Smith:

I shall not detain you long in the remarks I have to submit. Do Fraternal Societies make money by lapses? Here is a question that is rather delicate, and, to me, is one of great importance. Old-line insurance companies make their money by lapses. Are we, a Fraternal Society, going to take the ground that we must make our money by lapses? Are we going to take the ground that we must make our money from the unfortunates who are not able to keep up their assessments? That is the point. Is that Fraternity? Is there any Fraternity in it? This feature of Endowment has been referred to, and I believe the brother is right and honest in the conclusions that he has announced, that the Endowment feature will enhance the cost. It certainly will. But what I wanted to say was that the Endowment feature, as it is carried on by the Society to which I belong, pays one-half of the amount at expectancy. When one-half has been paid at the period of expectancy they go on and pay as they have done before, carrying their assessment, and the result will be, if they live a certain number of years, that they in course of time will die. Then the Society is reimbursed from the fact that it has only to pay half the amount.

Following the discussion a resolution was adopted which instructed the Committee on Legislation to "draft a bill for regulating the business and defining the status of Fraternal Societies, to be submitted to the several Legislatures."

This discussion of "Endowments" was due to legislative recognition of such concerns as the Iron Hall as Fraternal Beneficiary Societies. Failures amongst these "Endowment Fraternities" were anticipated and their methods were bringing into disrepute the Fraternal Orders like the A. O. U. W., Royal Arcanum and others.

In passing, it may be an item of interest to give the following majority and minority reports from the Committee on Laws and Constitution. After discussion, the Independent Order of Foresters was admitted to membership. The reports follow:

Your Committee on Legislation, Laws and Constitution, to whom has been re-

ferred the matter of the application of the Independent Order of Foresters, would respectfully report as follows:

1. That having accorded the representative of said Order a due and proper hearing by your Committee, and after an examination of its Constitution, your Committee found that the Constitution of said Order contained provisions which made it ineligible for membership in this Congress, as it now defines a Fraternal Order in its Constitution.

2. That your Committee deem it inexpedient and inadvisable to further amend the Constitution of this Congress that it may provide for membership therein of any Order containing any provisions or features of any character other than such as they now have and may have under the definition of a Fraternal Order, and now provided for in the Constitution of the Congress.

3. That your Committee therefore recommend the Independent Order of Foresters be not admitted to membership, because of its ineligibility, and that it has leave to withdraw its application.

The minority of the Committee on Constitution, Laws and Legislation dissent from the majority and would recommend the adoption of the following amendments to our Constitution and Laws:

To amend paragraph 4, page 56, as follows: By inserting after "disability," in the sixth line, the following: "Old age (to be not less than 63 years of age, with a minimum duration of membership of nineteen years)."

Also to amend sub-division 5 by adding the following: "Or upon attainment of old age (not less than 63 years)."

N. S. BOYNTON,
M. G. JEFFRIES.
S. A. WILL.

The report of the Committee on Legislation was unanimously adopted, and with that adoption commenced that vigorous and systematic activity which ever afterward has characterized the work of the Congress in shaping legislation in the several States. I quote at length:

The Committee on Legislation, Laws and Constitution respectfully report that the year 1891, in regard to legislation, proposed and enacted, has been fruitful in suggestion and in warning. It has been the legislative year in the large majority of States, and in most of them there has been some action proposed of importance to Fraternal Beneficiary Associations. We have, however, learned one valuable lesson from the experience of the year, even if much which ought to have been done has been omitted. That lesson is the absolute necessity of clothing this Committee with larger powers and placing at their command more adequate financial strength if it is expected that the Congress will secure for the Fraternal system which it represents desirable harmony of the laws, or prevent the adoption of restrictive and hampering legislation. It is impossible to accomplish by correspondence the best results in either of these directions. The presence of the Committee, or some member of it, at important crises, either for the purpose of attack or defense, is absolutely essential in very many instances. So far as our experience has gone the presence of a representative of this Congress, strengthened by the influence which such representative power gives, has proved effectual and salutary. The Committee has not felt authorized to charge the Congress with expense in this respect. They recommend that their successors be authorized, with the approval of the Executive Committee, or other advisory board, to incur such expense for personal visitation before Legislatures and legislative committees and for correspondence and assistance, as may, from time to time, appear to be necessary and proper for the common protection of our important interests.

A valuable result of uniformity of legislation will be probably, that we shall obtain in most, if not all the localities, laws applicable to our system alone, and that we shall no longer be associated with other and antagonistic systems in the same bill or Act. The average legislator today is in a woeful condition of ignorance as to what a Fraternal Order includes. In New Hampshire and Rhode Island, and perhaps elsewhere, the members of the Legislatures classed bond companies, endowment or-

ganizations and death benefit paying orders together, and it was in many instances extremely difficult to convince such members that the same objections did not apply to all alike. The result is the passage in New Hampshire of one Act which includes all of these several kinds of organizations. While we have no criticism to make in this place of our associates in that Act, we do most emphatically declare it to be our wish in all States to have separate legislation for our system. Furthermore, we believe that such legislation in each State should be the authority for the admission therein of all Societies embraced within the terms thereof, *and that such admission should not be by license from the Insurance Department or any State officer. It seems abhorrent to our Fraternal sensibility to be compelled to obtain a license to perform our deeds of charity and benevolence.* We do not object to a requirement for annual reports, but we do ask that the Legislature shall settle by appropriate language the question of admission and not delegate the power to any one man or any body of men.

The value of harmony and uniformity in State legislation is of no greater importance than the existence of the same qualities in the decisions of the courts in the several States and Provinces. Our Societies ought not to be subjected to the possibility of a successful attack in Massachusetts which would be defeated in Illinois, and, on the other hand, the member, or his beneficiary, should be accorded the same privileges to secure judicial recognition in the one State as the other.

The Congress should adopt some measures whereby defenses to unjust demands may be so conducted everywhere that all the essential grounds of defense for similar causes of action should be presented, to the end that courts reach a harmony and uniformity of conclusion. If the Congress will clothe our successors, or some other committee, or some of its officers, with power to act as advisory counsellors for the local attorneys of the Societies which compose its membership, we believe that much good will be attained. This proposition does not in the slightest degree disparage the ability of counsel representing our Fraternities. In all cases they may be better lawyers than any who are available for the purpose presented, but the special experience of the less able counsellor may happily supplement the skill and learning of the more able practitioner.

Brothers, we believe that the time has arrived, in the history of the Congress, when it should formulate and adopt sound methods and measures for the common weal, and carry them into prompt and effective execution.

We have met in four annual sessions and discussed the feasibility of our undertaking for practical work. By patient, earnest and laborious effort the friends of a National Fraternal Congress have succeeded in creating a strong sentiment in favor of its existence. To reach this opinion the progress has been exceedingly slow. It has, however, been attained, and we find a satisfactory degree of support from all our leading Fraternities. But the Societies which are here represented expect, now that we have become a strong organization, that we shall do something more than hold annual meetings, however fruitful they may be in cultivating social and friendly relations and in valuable discussions of vital questions. While there are many and varied ways in which the Congress can serve our Orders, none exceed in importance those which pertain to legislation and courts. They expect that we shall proceed to the accomplishment of our legitimate functions and duties. If we will do these things, they will, if we understand aright the prevailing feeling, accord to us all the support, financial and otherwise, necessary for the purpose, and if we fail in this duty, they will withdraw the favors hitherto generously granted, and the Congress must disband.

Your Committee, therefore, in order that the suggestions which they have made and which they deem of vital importance to the prosperity of the cause we so gladly and proudly represent, and for the continued existence of this Congress of Fraternities, shall not remain mere propositions, but become operative and useful forces, herewith present certain resolutions, the adoption of which they heartily recommend:

Resolved, That the action of the Congress in providing for a committee to prepare a public Act relative to our Societies, and to press the adoption thereof in the several States and Provinces, be re-affirmed, and that the members of the Standing Committee on Legislation, Laws and Constitution be added to and made ex officio members of that committee.

Resolved, That the Standing Committee on Legislation, Laws and Constitution be instructed to take all needful and proper steps to ascertain what are the laws of the several States, Provinces, Territories and districts affecting our Societies, and, in

regard thereto, to do whatever may seem to them required for the common protection, if, in their judgment, any efforts are necessary in addition to those which the Special Committee are authorized to perform.

Resolved, That the Standing Committee on Legislation, Laws and Constitution be instructed and authorized to act as advisory counsellors in any and all suits against our Societies, and that each Society is hereby urged to notify the Committee of all suits against it, the substance of the claims thereby respectively presented, and the name of the attorney conducting the defense, and that the Committee keep a record of such suits and their action in regard thereto.

Resolved, That the Committee on Legislation, Laws and Constitution be authorized, upon the previous approval in writing thereof by the President, Vice-President and Chairman of the Finance Committee, to incur such expenses as may be necessary to properly perform their duties.

Resolved, That, for the purpose of obtaining the necessary funds to carry out the provisions of the resolutions hereinbefore presented, and also for the performance by the Special Committee of its work, the provisions of paragraph 4 of Section 5 of the Constitution and Laws be suspended for the year next ensuing, and that for such year, but not afterward, except by due vote of the Congress therefor, the membership fee for each Society shall be \$20.00, and, in addition thereto, the sum of one mill for each and every one of its members in good standing on the 31st day of December, 1891.

JOHN HASKELL BUTLER,
J. W. KINSLEY,
J. M. SWAIN,
M. W. SACKETT,
S. A. WILL,
JOHN OTTO,
F. D. MACBETH,
M. G. JEFFRIES,
N. S. BOYNTON.

At this time (1891) the "Open Assessment Associations" were numerous and popular, and the question of distinguishing between them and the Fraternal Beneficiary Societies became one of importance. To indicate the thought of the day I quote from a paper read by Mr. D. E. Stevens in discussing "Topic 15" of the program:

"How can our laws be so framed as to secure from the courts decisions which will clearly define the difference between the Charitable Aid furnished by the Fraternal Orders and the business payments of the Open Assessment Association."

The word charitable in this question, I take it, is used in its primary and best sense. The question, in the light of the more common meaning of the word charitable, would probably have been more readily or fully understood if it had read, "How can the Laws of Fraternal Orders be so framed as to secure from the courts decisions such as will clearly recognize the difference between such Orders and Open Assessment Associations?" It appears to me that a comprehensive and proper answer to this question would be, let our laws be so framed and maintained as to clearly show that the aid which we furnish is fraternal or charitable—that is, that our cornerstones, as well as the Orders builded thereon, rest upon a foundation of brotherhood. With no word of criticism for the Assessment Company nor any institution which in any manner tends to help men do we come to the consideration of this question. We cannot in justice to the Orders separately consider one feature of their work, even though it be an important one, and especially not the payment of death benefits, for most of the Orders protect the interests of their worthy members against forfeiture during sickness, without compensation or return, aside from the Fraternal feeling or principle. When viewed as a whole, there is a wide difference between a genuine Fraternal Order and an Assessment Company. In fact, although in one particular, that of the payment of death benefits, they may each have a road which leads to the same end, they are as to foundation and structure entirely different. *The Company depends upon its army of paid agents to secure new members, while the Order, in exemplification of its principles and the carrying out of its system, depends upon its*

army of unpaid members to secure new entrants. The Company charges from three to four dollars per thousand per annum for expenses, so as to carry out its plans, while the Order collects from thirty to fifty cents per thousand per annum for expenses to carry out its plans. The difference of from \$2.70 to \$3.50 per thousand per annum standing for the difference between the business transaction where the labor is paid for and the voluntary, unpaid labor of the members of the brotherhood, who, through their interest in and love for their Order and their fellowmen, gladly do the work. Are some of our Lodges forgetting this great difference? That cannot change the principle. The Fraternal Order through its Lodge system provides for the visitation of its sick; helping its own in their time of need, and admits to membership only those who agree to become a part of a great brotherhood, which not only pays benefits to the families of its deceased members, but which inculcates lessons of charity by doing deeds of charity. The Order constantly appeals to man's better nature, even tending to make him a nobler man and better citizen.

Such Orders certainly must watch well against and promptly check the growing disposition to make them Life Insurance Companies, by copying into their laws those features which now distinctly mark the difference between Companies and Orders. To show a difference, there must, in fact, be a difference. When an Order has only the semblance of the Lodge system; when an individual can become a member without entering one of its Lodge rooms; when it undertakes to do an endowment or tontine business; when it forgets or forsakes the visitation of its sick, having only the form and none of the spirit of an Order; when its plans appeal to the selfish side of man; *when new members for its established Lodges are secured through paid agents*; when it permits members to name as beneficiaries those who are not of their families, heirs or dependent ones; when it says that an insurable interest, growing out of an indebtedness to one of no relation to the member, may be covered by membership in it; when it allows a man who has an insurable interest in his partner to cover that by one of its benefit certificates; when its members can make their estates, and thereby their creditors, their beneficiaries; *when its benefit certificates have a surrender value, then I beg to ask how a Court or anyone else is to tell why it should not be called an Insurance Company or Association, and, although it may call itself an Order, it will in no sense be such, nor should it.*

Let the language of our laws clearly express the contract of membership showing that each and all of the members are part of a brotherhood, not for speculation or profit, but to help each other; making the supreme body of the Order the Court in which all grievances shall be heard and rights determined. Then secure in such States as now have no such laws the passage of laws providing that in such Orders the contract entered into by the members thereof shall govern and be the only guide as to what was intended, and that all of the members shall be governed thereby. Then the Orders which adhere to the foundation principles that underlie all of the genuine Beneficial Orders of America to-day—that of a body of men bound together for their common good, each endeavoring to help the other in truly carrying out all that is included in the Lodge system of a true Fraternal Order; admitting to membership those only who enter the portals of their Lodges in the appointed way; helping its needy, visiting and comforting its sick, burying its dead, furnishing its own members relief if wholly disabled by disease, accident or old age, and to the widow and orphans of its deceased members the means for their sustenance; knowing and caring for its own and their loved ones, and they alone, leaving to other institutions all of the field which has, and forever should, lay outside the lines of a Secret Beneficial Order, there is, and will be, a difference, and such a difference as must finally triumph in equity, in law and in popular favor.

John A. Hinsey's remarks on Topic 15 were as follows:

This question is one that involves much study. Nearly all of the Fraternal Societies who pay to the beneficiaries of deceased members a death benefit of \$1,000 or more will certainly not claim that such contribution is purely a charitable aid; in fact, many of us are in the insurance field competing with the open assessment associations and old line companies as well as with all other insurance concerns.

The organizers of subordinate bodies in their endeavors to obtain membership certainly do not claim that theirs is not an insurance based upon business principles. On the contrary, so far as this insurance itself is concerned, they make that claim

strongly. True, we are not corporate bodies organized for the purpose of gain, and there are no stockholders, directors or other officers receiving large salaries, while with the open assessment associations such is to a great extent the case. We are doing business for mutual aid only, and in doing so the cost in guaranteeing a certain amount of protection has been placed at an absolute minimum figure, while the associations termed by the Congress "open assessment" have no doubt also placed the mortality cost as low as safety will permit, but in addition thereto various factors, such as expense, reserve fund, etc., have been added, which together aggregate a cost much greater than ours.

The insurance laws of a number of States exempt us as secret Fraternal Societies from compliance with the requirements of open assessment associations and old line companies, and no doubt in a number of cases the decisions of courts have defined clearly the difference, especially in the fact that members of Fraternal Orders agree to abide by the laws, rules and regulations that may be from time to time enacted; that such agreement forms the contract by which they are bound. It has also been held that the violation of any agreement, or a failure to obey the laws as enacted from time to time, may work a valid forfeiture of all rights, title and interest in the benefit fund.

However, when the beneficiary of a member seeks to enforce the payment of a contract which, for some apparent good reason, has been refused, the issues assume a legal aspect and must be treated in that manner when presented for judicial decision. Under such circumstances courts would no doubt define us as business institutions and compel the performance of such contract in the same manner as they would if the action had been brought against an open assessment association.

In 1913 how nearly do Fraternal Beneficiary Societies approach the status of "Open Assessment Associations" of 1891?

The session of 1891 was a memorable one for the number of important questions discussed and plans for action adopted. The subject of "Uniform Blanks" was thoroughly considered, and the remarks of Mr. J. A. Hinsey should prove of interest:

I have given the question of reporting to State insurance departments considerable study. There are now a number of different forms in use. For Fraternal Societies I regard the form in use by the insurance department of the State of New York to be the most complete of any of the States to which we are now making reports; and Iowa and Wisconsin have adopted this form almost wholly. The forms of each of the other States to which we are now reporting are quite different, though in none of them the information desired covered so wide a range. The Nebraska form is, to my mind, the most defective.

A brief synopsis of the requirements under the New York form is herewith given:

First.—Balance sheet showing cash receipts and disbursements and balance on hand at the end of the year.

Second.—Statement of invested assets.

Third.—Statement of non-invested assets.

Fourth.—Statement of liabilities.

Fifth.—Statement of contingent mortuary assets.

Sixth.—Statement of contingent mortuary liabilities.

Seventh.—Exhibit of certificates or policies, requiring under the separate headings the number of members under one heading and the membership for the State only under another. Following same appears an exhibit of the number of members and the amount of insurance in force under each age (present age being desired).

Eighth.—A number of miscellaneous questions embracing general information regarding the character of the business of the association, its plans, manner of electing officers, etc., then follows:

Ninth.—A list of all losses paid during the year, requiring the certificate of policy, number, name, date of payment, etc.

Tenth.—A list of all losses unpaid at end of year.

Eleventh.—An exhibit of assessments made during the year. This statement requires information as to number of assessment, class, date of issue, number of members in force at time of issue, the number actually assessed, the amount of assessment, the amount collected and its final disposition; whether disbursed for death losses or other items.

Twelfth.—A number of schedule forms requiring information as to invested assets of every description, information as to values, incumbrances, etc., being required.

The Societies represented in the Congress in 1891 were: Ancient Order United Workmen, Knights of Honor, Royal Arcanum, American Legion of Honor, Order of Chosen Friends, National Union, Knights of Maccabees, Order of United Friends, Royal Templars of Temperance, Equitable Aid Union, Knights and Ladies of Honor, Improved Order of Heptasophs, Home Circle, Fraternal Mystic Circle, Knights of the Golden Rule, Fraternal Legion, Order of Golden Chain, Order of Mutual Protection, Royal Society of Goodfellows, North Mutual Relief Association, Endowment Rank Knights of Pythias, United Order of Pilgrim Fathers, Protected Home Circle, Artisans Order of Mutual Protection, Legion of the Red Cross, Woodmen of the World, Knights of St. John and Malta, Independent Order of Foresters and the Iowa Legion of Honor. The 28 Orders had about twelve hundred and fifty thousand members.

This congress authorized the appointment of a Special Committee to draft a Uniform Bill which was to serve for the years 1892-3 (just 100 years after the first Act of Parliament for the regulation of Friendly Societies, and twenty years after the great Act of 1875). The Bill prepared by this Special Committee has been the model from which others have been written. The men who composed the Committee were: John Haskell Butler, Massachusetts; W. B. Beebe, Connecticut; H. H. Morse, New York; John Otto, New Jersey; M. W. Sackett, Pennsylvania; John B. Treibler, Delaware; Oliver B. Craig, Maryland; D. E. Stevens, Ohio; Frank D. Macbeth, Indiana; Frank N. Gage, Illinois; D. P. Markey, Michigan; John A. Hinsey, Wisconsin; E. R. Hutchins, Iowa; B. F. Wilson, Missouri; W. O. Rodgers, Nebraska; J. W. Kinsley, Montana; B. A. Harlan, District of Columbia; J. A. McGillivray, Ontario; H. C. Sessions, South Dakota; A. R. Savage, Maine. Subsequently there were added to the Committee: M. G. Jeffries, Wisconsin; J. E. Shepard, Massachusetts; W. R. Spooner, New York; W. A. Fricke, Wisconsin; M. W. Van Auken, New York; J. J. Acker, New York; W. N. Davenport, Massachusetts.

At the sixth Annual Session of the National Fraternal Congress, held in Washington, D. C., November 15, 1892, this Special Committee was consolidated with the standing Committee on Legislation, composed of S. A. Will, Julius Swain, N. S. Boynton, W. O. Robson and John A. Hinsey and others already mentioned.

The Special Committee on the Revision of the Uniform Laws to be entitled, "An Act Regulating Fraternal Beneficiary Societies, Orders or Associations," reported a Bill of fifteen sections, in full, or in substance, as follows:

Section 1.—A fraternal beneficiary association is hereby declared to be a corporation, society or voluntary association, formed or organized and carried on for the sole benefit of its members and their beneficiaries, and not for profit. Each association shall have a lodge system, with ritualistic form of work and representative form of government, and shall make provision for the payment of benefits in case of

sickness, disability or death of its members, subject to their compliance with its constitution and laws. The fund from which the payment of such benefits shall be made, and the fund from which the expenses of such association shall be defrayed shall be derived from assessments or dues collected from its members. Payment of death benefits shall be to the families, heirs, blood relatives, affianced husband, affianced wife of, or to persons dependent upon the member. Such associations shall be governed by this Act and shall be exempt from the provisions of insurance laws of this State, and no law hereafter passed shall apply to them unless they be expressly designated therein.

Section 2 provides that all associations then doing business in the State, and coming within the description of Section 1, may continue such business.

Section 3 provides that any association coming within the description of Section 1, organized in another State or Province, but not then doing business in the State, should be admitted on filing copy of charter, etc., and paying prescribed fees.

Section 4 provides for an annual report to be filed by March 1 and giving details of condition under twenty-five items specified in the Bill. The Commissioner is empowered to require any additional information "in relation to its doings or condition, or any other matter connected with its transactions relative to the business contemplated by this Act, and such officers of such associations as the Commissioner of Insurance may require shall promptly reply in writing, under oath, to all such inquiries."

Section 5 provides that the Commissioner of Insurance shall be appointed as attorney to accept service of any legal action.

Section 6 provides for the issuance of a license.

Section 7 provides for incorporation.

Section 8.—Such associations shall not employ paid agents in soliciting or procuring members except in the organizing or building up of subordinate bodies or granting members inducements to procure new members.

Section 9.—No contract with any such association shall be valid when there is a contract, agreement or understanding between the member and the beneficiary that the beneficiary or any person for him shall pay such member's assessments and dues, or either of them.

Section 10.—The money or other benefit, charity, relief or aid to be paid, provided or rendered by any association authorized to do business under this Act shall not be liable to attachment by trustee, garnishee or other process and shall not be seized, taken, appropriated or applied by any legal or equitable process, or by operation of law to pay any debt or liability of a certificate holder or of any beneficiary named in a certificate, or of any person who may have any right thereunder.

Section 11 provides for meeting of the legislative bodies in other States or Provinces than where incorporated.

Section 12 provides penalties for false and fraudulent statements.

Section 13 provides procedure against an association for refusing to make report as required.

Section 14 provides penalty for acting as officer, agent, or otherwise in violation of the law.

Section 15 provides for the repeal of laws inconsistent with the Act, and exempting Masons, Odd Fellows and similar Orders from the application of the Act.

By unanimous consent the Uniform Bill as reported was referred to a Special Committee of five to be edited before being printed and the President (M. G. Jeffries) was appointed as the special representative of the Congress to attend the next Convention of Insurance Commissioners and present for their approval the Uniform Bill.

It was reported to the Congress that contemplated legislation in Canada would prevent Societies of the United States from thereafter securing permission to operate in the Dominion.

Mr. James E. Shepard read a paper on British Friendly Societies which should have had serious consideration and should have served as a lesson to fraternal managers. It appears to have made no immediate impression. The concluding paragraph, had it been applied to the Fraternal Orders and heeded, would have saved a world of trouble. It follows:

There are societies full of erroneous features. The first, and perhaps the most important, is the inadequacy of the rates of contribution demanded from members. The rates have apparently, in most instances, been calculated not so much after consideration of the value of the risks incurred as with the desire to frame a scale of subscriptions, which, from its liberality, would be likely to become popular. A society will sell for threepence a week benefits that in reality should be rated at sixpence; hence bankruptcy is, sooner or later, inevitable. Nor is the case thus supposed by any means extreme or rare. . . . Trusting to the so-called profit from secession (lapses) it is deemed sufficient if the society pays its way, and if the claims for sickness are not more than the total premiums received—no margin, or but little, remaining to be invested as a provision for future years.

I have stated that the general laws for the control of Fraternal Beneficiary Societies were enacted in New York and Massachusetts in 1888.

The first Uniform Bill, with the sanction of the National Fraternal Congress, became a law in Michigan in 1893, exactly 100 years after the first Act of Parliament in relation to Friendly Societies.

The provisions of this Uniform Bill are in striking contrast with the utterances heretofore quoted from the proceedings of the Congress. Then it was contended that State legislation was neither necessary nor desirable. At the seventh Session of the Congress at Cincinnati in November, 1893, we have the unanimous adoption of a recommendation to secure the enactment of the Uniform Bill by States having no laws relating to Fraternal Societies.

During 1893 the States of Michigan, Illinois and New Jersey enacted into law (with some modifications and changes) the Uniform Bill prepared in 1892 by the Committee on Legislation.

The State of Maine eliminated from its laws the authority of endowment societies to transact business, while New Jersey continued such authority. The Maine law (Section 3, Chapter 234) was otherwise amended.

- A law was enacted in Pennsylvania which was little more than a definition of a Fraternal Society and exemption of such Society from the general insurance laws. An annual statement of the usual form was required.

The eighth Annual Session of the National Fraternal Congress was held at Buffalo in November, 1894. I quote from President N. S. Boynton's address to show that some leaders were not in sympathy with the progress made after 1890:

Your President has been, and is now, considered quite radical in some of his views, particularly in regard to the objects and purposes of Fraternal Beneficiary Societies and the necessity for drawing the lines closely between the various systems of life protection, and no doubt some go so far as to say that he is a "crank" in that respect. Well, possibly the appellation is not out of place, and I accept it good naturedly.

After a trial of two or more years to secure uniform legislation, I have about come to the conclusion that we made a mistake in framing a Uniform Bill which places our Fraternal Beneficiary Societies under the supervision of the insurance departments in the different States. Not that I am adverse to State supervision, but because I think it ought to be done by some official other than the Insurance Commissioner, even if such an office had to be created for that special work. We ought to be

entirely divorced from the speculative, cold business associations. So long as the voluntary beneficial associations are even indirectly associated with the other systems, just so long will they be looked upon as a part and parcel, or at least as an auxiliary, of the old line companies.

Now, let me draw the lines clearly and distinctly so there can be no mistake.

At each session since this Congress was formed the matter of uniform State legislation has been a subject of earnest discussion. While in nearly every State they were exempt from the operations of the insurance laws, it was conceded that they should come under some kind of State supervision as a protection to themselves and prevent our societies from being classed with a large number of so-called fraternal bodies or associations organized for speculative purposes.

The lines of demarcation between the three systems are clear and distinct and should be kept so in all legislative enactments.

The objects of these Fraternal Orders or Associations, as incorporated in their fundamental laws, will be found substantially as follows:

First.—To unite fraternally all persons of sound bodily health and good moral character who are socially acceptable, etc.

Do the insurance and assessment companies provide for this?

Second.—To give all moral and material aid in its power to the members and those dependent upon them.

Do the two other systems do this?

Third.—To educate the members socially, morally and intellectually.

Do you find this object in the laws of the other systems?

Fourth.—To create a fund for the relief of sick and distressed members, and to care for the living and bury the dead.

Do the other systems provide for this?

Fifth.—To establish a benefit fund or funds from which, on satisfactory evidence of the death of a beneficial member of the Order who has complied with all its lawful requirements, a sum not exceeding dollars to be paid to the beneficiary of such member, as he shall direct, and as the laws of the Order shall provide, and upon the total and permanent disability of a beneficial member, either as a result of disease, accident or old age, who may be in good standing with the Order at the time of the incurrence of such a total and permanent disability, such sum of money and in such manner as may be fixed in the laws of the Order.

Do the purely business corporations provide for such protection?

Sixth.—To establish a fund or funds to pay such sick, funeral and accident benefits as its laws may provide.

Do the insurance companies establish such funds?

The laws of the National Fraternal Congress, representing the legitimate fraternal beneficiary system of this country, define what societies may be represented therein, as follows:

Now, I hold that the fraternal system is entirely different, separate and distinct from the old line or level premium system and the open business assessment system. Only those societies, corporations or associations organized and carried on for the sole benefit of their members and beneficiaries, not for profit and gain, can be classed as legitimate Fraternal Beneficiary Orders.

The mutual agreement between the fraternal society and the member is not a policy or contract like that entered into between a life insurance company and its policyholder. The fraternal societies simply issue a certificate of membership in which the member agrees to comply with all laws, rules and regulations in force at the time he becomes a member, and with all changes in the laws, etc., that may be made during his membership.

The fraternal beneficiary system makes no contract of insurance with its members in the common business acceptation of the term "insurance." Nowhere in the objects and purposes or the fundamental laws of the associations composing the national fraternal beneficiary system, or the laws governing the National Fraternal Congress representing this system, can the terms "Policy" or "Insurance" be found.

As I have said heretofore, and now reiterate, very few of the members and many

of the officers of Fraternal Benefit Societies realize that the great benevolent co-partnerships or associations to which they belong, simply furnish them pecuniary aid in case of disability arising from sickness, disease, accident or old age, and their families protection or a certain competency in the event of their death. They are not insured nor furnished insurance.

With this widespread misunderstanding of the objects, aims and purposes of the Fraternal Beneficiary Orders among their officers, members and journals, is it any wonder that our legislators look upon our societies as cold, business corporations, covered by a gauzy fraternal mantle, and will it not account for the difficulty experienced heretofore by the Orders through the National Fraternal Congress to secure favorable legislation, both in the State Legislatures and in the United States Congress?

The forward movement could not be stopped, and President Boynton's rather antagonistic position was not accepted as the true attitude of the majority. This is clearly indicated by the special report of the Committee on Statistics and Good of the Orders to which his address had been referred. And this reference culminated in other special reports by that Committee which have revolutionized the business of Fraternal Beneficiary Societies and resulted in radical legislation in relation to contribution rates and valuation.

In 1894 the Uniform Bill was passed by both houses of the Legislature of Iowa, but was vetoed by the Governor. An unsatisfactory bill was defeated in Maryland. The Congress made some changes in its draft of the Uniform Bill, but not material to its important provisions.

In 1895 a new draft of the Uniform Bill was submitted to the Congress at its Ninth Annual Session in Toronto. The changes were not of sufficient importance to justify recording in this history of legislation.

The most important and far-reaching movement ever taken by the Congress had its inception at the Ninth Annual Session in a Special Report submitted by the Committee on Statistics and Good of the Orders, which was incidentally the result of the Committee's report in 1894 on President Boynton's address. This Special Report was of such grave import that it was read and considered in executive session, behind closed doors and without the stenographer. For four hours there was heated discussion and then an adjournment until the following day. After further consideration in executive session the only action was "to continue consideration of the subject matter for the ensuing year and make report to the Congress at its next stated meeting."

I quote from the Special Report:

In the beginning of these Orders we proceeded on a theory that we mistakenly and without experience assumed to be an established fact, and it has until lately been accepted as sound, that through the process of additions and lapses a standard of average age could be secured and maintained that should not increase as an Order was longer and longer in business. It has been evident to many that this theory was untenable, and in order to clearly demonstrate that the change in view was demanded of all in interest and could not longer be safely ignored, your committee prepared a special blank for the use of the societies from which the data necessary to the proper understanding of prevailing conditions, that prove the theory unsound, might be readily attainable and will appear in tabular form as a part of this report.

Analysis of the table leads to the inevitable conclusion that barring merely the inceptive period of an Order, when conditions more or less abnormal prevail, that there exists a gradual and very general increase in the mortality rate wholly due to the increasing average of age, or, in other words, the greater maturity of lives. In short, comparing the "Theory" and the "Result," we come to the inevitable conclusion that the one has no relation to the other and that administration based on "Theory" must give place to government by "Fact."

We believe that the existing Fraternal Orders can be perpetuated provided they heed the lesson and the warning that the experience of the past so plainly gives and teaches.

As the object of this reference was to devise, if possible, a plan of procedure that should be best for all concerned, it is proper to say here that, while the Fraternal Orders proceed on the same general line in prosecution of their work, there are so many different methods of management that a rule applying to one would not apply to another, and any general rule must either be modified, and thus in part nullified, to meet the requirements of our variance in administration, or our varying plans must be brought to some common agreement. Here lies the first difficulty.

It is indispensable to recognize the Law of Mortality as the governing factor. If this be admitted, safety demands, if the Benefit be a fixed sum, that the contribution or rate should be graded to age, or, in other words, to the risk of dying, so as to conform to that Law; or if the rate of contribution be flat or graded at age at entry to be maintained during life, then Equity demands that the Benefit should be graded proportionally to time of continuance or such other modification made as shall be fair and just in bringing contribution and return to their proper portion.

The rate fixed for life at the age of entry is common to nearly all the Fraternal Orders. Our experience demonstrates that it is faulty in theory, unsound in practice and should be remedied, and this can be accomplished by increasing the rate with increasing age or by so adjusting the rates as to establish a fund that shall equalize the cost throughout life, or, in other words, establish a Reserve. If with our experience we should institute a new Fraternal Order at the present time, one or the other of these, the law permitting, perhaps more or less modified, but in substance the same, would probably be adopted. In the proposition advanced the elements of "Safety" and "Equity" are separated, and first to be considered is the element of "Safety."

Loading the rate at age of entry to minimize the cost of advancing years is the Old Line Plan of the reserve. The establishment of such a fund has, until within a year or two, been generally condemned by the Fraternal Orders, not for the reason that it is not of itself good, but that it has been improperly administered and made a means of gravest abuse.

Properly adjusted to our requirements, it would make protection certain, work wrong to no man and be in the direct line of safety.

Any table based on this plan must be accurately worked out and grounded on the condition of a fixed annual amount payable by installment, of which a certain per cent, with its increment of interest, will form a reserve fund. This reserve can very safely be largely reduced from the reserve based on the standard tables. It would be subject to this disadvantage that it would go beyond the limit of what Fraternal Orders may do in certain States, and in these States additional legislation would be required. It would undoubtedly bring us more under supervision, would increase the cost of management, require larger contributions in the beginning to the Benefit Fund and lay us open to the unfounded but plausible objection that we had departed from our original purpose, but, despite these drawbacks, would be right in line with the best interest of every member of every Fraternal Order.

The step rate might be so modified and arranged by adjusting and increasing each advancing term to age when the rate would become such a burden as to be intolerable that the accumulations would then take care of the excessive cost of the future. In this way the step rate and reserve plan would be combined and the best features of each secured.

In approaching the matter of an equitable rate that should not burden, and yet should make certain, your committee cannot bring to its consideration the scientific skill of the trained actuary, but they venture to present in this line some of the features of the reserve and the effects it will produce based upon varying conditions. The partial tables independently presented are substantially mathematically correct and can be worked out in full with little expenditure of time and effort. Into them enter two elements that cannot be ignored, namely, the natural cost and the increment of interest on the amount paid to the Reserve, the amount contributed to the Reserve being modified to meet some of the many objections brought against it.

Possibly further modifications might be made in the direction of smaller cost and greater returns.

The second clause of the proposition will require but brief consideration. If some

plan is not provided so as to fully provide for the safety of the member, then Equity demands that contribution and return shall be proportionately adjusted. If the rates now paid cannot be raised (and as at present established is not sufficient to provide for the payment of the certificate in full without injustice to other members) there remains but one remedy within our reach, and that is to reduce the promise of performance to a just, honorable and true fraternal ratio with contribution. Should this plan be attempted, there is to be considered what is a proper reduction, and as it is a matter of proportion merely that can be readily ascertained, it seems to require no particular demonstration at this time.

Your Committee have not labored under the delusion that what they might offer would be the best, or that, provided it were the best and most practical, that existing Orders, even if they would, could make the radical changes that the adoption of a new plan would require.

We are too long established, our number too great, our membership too little instructed and too firmly convinced that the cheapness of the old way will always prevail to be readily changed, and it may not be rash to intimate that possibly there are some in this body who are but partially convinced of the necessity of any change whatever.

Your Committee would earnestly urge that whatever change be attempted at any time in the future it shall be one that shall be effective in curing the evil to which it applies and not such a one as merely replaces one ill with another, perhaps in time to be more unendurable than the original. Any change must be reasonable and wise, and if such cannot be brought about, then we should attempt none, for an unwise and defective effort would of itself work very grave injuries. As our formative period has passed, the educational period now succeeding it should be the object of our united efforts, and, when education has sufficiently advanced, then the changes needed will come without shock or jar to the system. The ills now known and appreciated by the few will in the school of experience be fully known to the many, and with adjusted and equalized contribution and return we shall enter upon a phase of existence that shall go as far beyond what we have heretofore done, as what we have heretofore accomplished is in advance of what we were twenty years ago. What your Committee have attempted is to present certain matters as directing merely along an educational line.

Is it too much to say that if experience teaches that changes are necessary and such changes are not made because of prejudice, lack of appreciation or an undue sense of security based upon the plausible but untenable theory that what has been will continue to be, then the law of the survival of the fittest will produce its natural and inevitable results?

The Special Report was signed by J. E. Shepard, D. E. Stevens and H. A. Warner.

At the Tenth Annual Session of the Congress in Louisville, November, 1896, the Committee on Statistics and Good of the Orders made a second Special Report, which was signed by J. E. Shepard, D. P. Markey, D. E. Stevens, B. F. Nelson, H. A. Warner, F. L. Brown and E. R. Hutchins.

In this report facts and figures were presented to support the general allegations of the insufficiency of existing contribution rates to provide for promised benefits. I limit quotations to a few excerpts:

Age can have but one result, and here is found the greatest factor of increased cost. It, in fact, dominates our plan.

As a chain is only as strong as its weakest part, so may we not say that the strength of the Fraternal System as a whole is as strong as its weakest part; and, if so, should not its weakness rather than its strength be considered?

To some of us already comes a condition which we believe has been brought about by the full and natural effect of what we have endeavored to point out as a menacing danger to us all which might and could have been avoided in great part had we wisely provided against it in the beginning. Your Committee have taken much time in demonstrating matters of very easy attainment and common knowledge and now beg to offer for your consideration another and just as potent factor of evil, just as well

known to us all, just as little heeded and entirely in our control, to wit, our attempt to outdo to so great an extent every form of insurance or protection heretofore devised; and, while so attempting, give no heed to maxims of prudence or show any inclination to take advantage of experience of others and in so doing be enabled to shun the evils which came to their knowledge through this same experience that we quote, generally cast aside with contempt.

Your Committee, in closing, desire to say that they endorse as sound the conclusions embraced in the Special Report made at Toronto and would supplement it by saying here that, in their opinion, there is no better, and certainly no safer, time to reform our plan than now, if it can be attempted on right lines, for a reform attempted in other than the right direction would be no reform at all and would work a double disaster.

We have in combination two elements in chief with which we must contend: First—An increasing liability because of an ever increasing mortality rate which may be to a great extent modified and held in check for a longer or shorter time by a large increase in membership—and again arises the question, does anyone claim the necessary increase can always be maintained? Second—An improper rate of contribution and return by which the present draws upon the future to an unjustifiable extent. The first is partly, the second wholly, in our control. Neither of these can be entirely remedied by increasing the frequency of assessments or by any method that shall leave the cause unchanged.

The gross inequality between contribution and return must be properly adjusted. A general move should at once begin to educate all our members to a full realization of the fact that impossibilities, even if labeled "Fraternal," are still "Impossibilities."

The greatly enhanced liability of the future must in some way be provided for or guarded against in the present. The old member who will be first to protest at any change in his rate must be brought to realize that any change in the right way is in the direct line of his protection first of all.

In bringing their work to an end your Committee, from the facts and data which have come to them and which they in part have submitted in this report, do unanimously recommend to this Congress that as the representative of our Fraternal System it shall declare that it is the imperative duty of the several Orders represented here to make, at the earliest practical date, proper provisions for meeting the inevitable increase in the rate of mortality by an adjustment of rates so that contribution shall be equitably proportioned to the hazard at risk.

This second Special Report was also considered in executive session and finally referred back to the Committee for further investigation with instruction to make a third report in 1897. On motion of Dr. Oronhyatebeha, the Committee were further instructed "to prepare and present to the next Congress such plans or systems of fraternal beneficiary protection that seem to them best adapted to the establishment of permanent fraternal protection at the lowest possible cost."

Supplemental to its Special Report the Committee gave the plans upon which the Ancient Order of United Workmen and the National Reserve Association had reared, and the plan proposed for the Royal Arcanum to be acted upon in 1897.

The general statements by the Committee are clear-cut, comprehensive and correct expositions of sound insurance principles, and they are supported by unquestioned facts from the actual experience of Societies which were members of the Congress. The presentation, supplemented by the more direct and concrete reports of 1897 and 1898, convinced those who attended the sessions of the Congress and culminated in the construction and publication of the National Fraternal Congress Table of Mortality and contribution rates deduced therefrom. But the educational effect contemplated by the Committee did not materialize in so far as the membership at large were concerned. Besides this there developed serious differences between the officials and managers, even between associate officers in the same Society, and from 1900 to the present writing an almost continual internecine (or maybe more properly fratricidal) warfare

has been waged between officials of different Societies or between officials and members of the same Societies. But in the midst of this conflict educational progress has been made as will appear in the continuation of this history.

The Committee on Statutory Legislation reported to the Congress in 1896 that the year had been fruitful in gain to the cause of uniformity in legislation. The Uniform Bill had been enacted into law in Ohio and Iowa, and objectionable bills had been defeated in the State of Maryland and the Province of Quebec.

The Eleventh Annual Session of the National Fraternal Congress convened in Port Huron, October 15, 1897. This meeting is of particular interest to the student, and I regret that space will not permit the republication of the many valuable papers and reports which were presented and the discussion that followed.

There was the spirit of reform everywhere, even in the atmosphere. A few adhered to the old tenets and sounded a note of warning of the wrath to come, but the Committee on Statistics and Good of the Orders had inaugurated a movement that was not to be checked short of revolution. D. P. Markey, Chairman, immediately the Congress organized for business, offered a resolution for his Committee:

Resolved, That the incoming President of this Congress be requested to appoint a Special Committee of three to prepare minimum tables of rates upon the level and step rate plans and any modifications of the same which may seem to them desirable and commensurate with safety, and that said Committee report at the next session of this Congress.

Resolved, That this Committee be authorized to employ actuarial assistance at an expense not to exceed five hundred dollars.

D. P. MARKEY, *Chairman*.
 D. E. STEVENS.
 B. F. NELSON.
 DR. H. A. WARNER.
 DR. E. R. HUTCHINS.
 JULIUS M. SWAIN.
 J. G. TATE.
 F. A. DRAPER.
 F. W. SEARS.
 W. T. WALKER.

Mr. Powers, of Illinois, immediately thereafter presented the following preamble and resolution and asked that it be considered in connection with the pending resolutions

WHEREAS, At the last session of this Congress a resolution was unanimously adopted in which it was declared to be the "imperative duty of the several Orders represented here to make, at the earliest practical date, proper provision for meeting the inevitable increase in the rate of mortality by an adjustment of rates so that contribution shall be equitably proportioned to the hazard at risk"; and,

WHEREAS, The very able report of the Committee on Statistics and all the papers read before this Congress clearly indicate that it is the duty of this Congress to not only reaffirm its declaration of one year ago, but also to urge immediate action by the Societies in the direction of safety and perpetuity; therefore, be it

Resolved, That it is the sense of this Congress that all of the Societies here represented should immediately adopt such tables of assessments and changes in their laws as will provide ample income to meet both present and future mortuary demands, and a safe plan for investment of such accumulations as will insure the perpetuity of the organization.

On motion, action upon the above resolutions was postponed for the present in order that they might be printed.

On the following day Past President Spooner proposed substitutes for both resolutions, which were adopted, as follows:

Resolved, That the incoming President of this Congress be requested to appoint a Special Committee of three to prepare tables of rates upon the level premium, the natural premium or step rate plan, and the step rate plan with such modifications by applying to a proper extent the principles of a reserve or emergency fund.

Said Committee shall, so far as possible, secure and present to this Congress a comprehensive statement of the remedial changes which have been, or shall in the ensuing year be, adopted by any Fraternal Order, the object herein sought, being the securing of such knowledge as shall be of value to this Congress in arriving at definite, safe and sound conclusions.

WHEREAS, At the last session of the Congress a resolution was unanimously adopted in which it was declared to be the "imperative duty of the several Orders represented here to make, at the earliest practical date, proper provision for meeting the inevitable increase in the rate of mortality by adjustment of rates so that contribution shall be equitably proportioned to the hazard at risk";

Resolved, That this Congress hereby reaffirms its declaration of one year ago.

John Haskell Butler, Chairman of the Committee on Statutory Legislation, presented a lengthy and comprehensive report, from which I extract the following:

Substantial gain has been made in extending the operation of the Uniform Congress Act.

Our Uniform Law has during the year been adopted in the States of Missouri and Nebraska and by the National Congress as legislation for the District of Columbia.

Even this progress, by no means satisfying the full measure of the wish and expectation of your Committee, was made only by the most diligent effort and in the face of serious opposing influences.

In Missouri and the District of Columbia modifications of our Uniform Bill were yielded.

The following clause was inserted in the Acts adopted:

"Any such Fraternal Beneficial Association may create, maintain, disburse and apply a reserve or emergency fund in accordance with its Constitution or By-Laws."

This was done not only because of a demand therefor, which, if refused, might have jeopardized success in obtaining the enactment of the law, but, in view of the possibility, not to say probability, that many of the fraternities now associated in the Congress may, in the near future, adopt reserve fund provisions, it seems wise that statutory permission therefore should exist.

The Committee ask that their action in this respect be endorsed, and recommend that the Uniform Bill be amended by adding this same provision to the end of Section 1.

The Missouri Bill also limits the right of the Commissioner to make inquiries outside the special questions in the Act, to the statements in the Orders' reports to the department, and we recommend the Uniform Bill be amended accordingly.

Although the field to which this particular statute is applicable is not extensive, it is believed that the fact that it was thus favorably regarded by the law-makers in the National Congress, representing all the States, would very materially assist in gaining for us recognition in those States where we are yet seeking legislation.

In the State of New York some vicious attempts were defeated and a good amendment secured.

In Wisconsin the Insurance Codification prepared by the Commissioner and a special commission appointed for the purpose, in its application to our system was so objectionable to fraternal interests that all who examined it must have deeply felt that it must not become law.

Not to speak of all its features, that it should have grouped all classes of companies furnishing protection on the assessment plan within the same general provisions, was sufficient to condemn it.

We have been and should continue to be tenacious, of having all laws govern-

ing fraternal embraced in one Act. There will then be no fear of the unexpected application of adverse requirements.

Notwithstanding the appeals to the Commissioner to endorse our Uniform Bill, he held rigidly to his own ideas, and pushed them with zeal and ability. It became necessary to resist with vigor. The value of combined effort and the solidifying influence of the association of fraternities in this Congress has never been so grandly displayed as in the defeat of this measure.

Colorado is another State wherein a hostile attack was made. A measure was introduced, designed, among other details, to require a deposit of money by the Orders doing business there. A splendid rally was made and the proposition met, as it deserved, ignominious failure.

The legislation in the Province of Quebec remains unchanged. The Provincial authorities are not inclined to insist upon compliance with its provisions. They are investigating the subject of legislation adapted to the fraternal system with care. It is believed that before the authorities decide upon any further recommendations, ample opportunity will be accorded us to present our views.

The Congress Bill was introduced in Kansas, and little doubt was entertained that it would pass. A notion obtained, however, among the legislators that only representatives should legislate in our governing bodies, and that life membership and the conservative and preservative power of the official boards was injurious. It was the opinion of those in charge of the bill that an attempt to carry it would result in having it so amended. It was therefore wisely abandoned.

The legislation in New Jersey was not important as affecting our class of associations.

Adverse legislation was offered in Texas, North Carolina and California and defeated.

Thus we have given a resume of the achievements during the legislative session of 1897.

There is much to encourage us in continuing to press the Uniform Bill.

The paper prepared for distribution among the Representatives and Senators in Congress by Past President Boynton, presented as a brief to the committees hereafter named, is a most able and convincing argument for our cause and the Uniform Bill. It served the purpose nobly. The committee annex the paper to this report, together with the reports of the committees of the House and Senate on the District of Columbia, to each of which it was attached, with the purpose of having it forever preserved in the records of the National Fraternal Congress.

The Uniform Bill, as it now stands, with the provision relative to a reserve fund, hereinbefore recommended, is as satisfactory as we can perhaps make it. We shall, most probably, as our system and our experience in its development increases, wish to change or improve some of its provisions.

The insurance departments are not hostile to our fraternal efforts. The belief probably prevails in many of them that our plan of protection has defects. It is our conviction that any efforts which we may make to strengthen our methods will be encouraged and not retarded. It is not therefore wise to ask for any more than is essential, and the better policy will be to endeavor to create, rather than diminish, a feeling of mutual confidence between our Orders and the departments of insurance throughout the country.

Not only for its forceful enunciations, but as a tribute to the memory of Major N. S. Boynton, I quote liberally from his "Brief submitted to the House Committee on the District of Columbia," to which reference is made by Chairman Butler:

Gentlemen: I desire to submit to the committee some of the reasons why the representatives of the Fraternal Beneficiary Societies of this country ask the passage of the bill entitled "A bill regulating Fraternal Beneficiary Societies, Orders or Associations in the District of Columbia." I would first call your attention to the fact that in 1886 a body was formed in Washington, D. C., and named the National Fraternal Congress. It was composed of representatives from the leading legitimate Fraternal Societies. One of the principal objects of the Fraternal Congress was to secure uniform legislation throughout the country for their protection, such legislation to be so framed as to protect the people from fake associations which were being organized in almost every State in the Union.

Up to 1893 every Association claiming to be fraternal and working under the lodge system were exempt from the operations of the insurance laws of most of the States; hence hundreds of speculative Societies were formed. This the National Fraternal Congress sought to prevent, and has prevented by securing the adoption in a number of States of the Uniform Bill, which is presented to you for your consideration.

The legitimate Orders and Associations are willing and desirous, through the legislation proposed, to come under the supervision of the constituted authorities of the District of Columbia.

To make clearer, if possible, the reasons why the fraternal beneficiary system asks this special legislation, if it may be so termed, I submit the following:

In this country we find three separate and distinct systems of life protection as follows:

A. The "old line insurance or level premium system," with its endowment, tontine and semi-tontine features. The contract between the company and the insured is called a policy. Profit and gain is the controlling object. In every State laws are found on the statute books providing for their incorporation and governing their operations.

B. The "open business assessment system." The contract between the association and the insured with some is called a policy, with others a certificate. This system has no fraternal bond to cement it together. The associations comprising this system are purely business concerns, without a representative form of government, generally close corporations. In every State laws are found upon the statute books providing for their incorporation and supervision.

C. The "fraternal beneficiary system" is composed of societies with a representative form of government, with subordinate lodges and ritualistic work, furnishing financial assistance to living members in sickness or destitution, providing for the payment of its living members benefits in the case of total physical disability, arising from sickness or old age, and providing death benefits in the event of the death of a member for his family or dependent blood relatives.

The lines of demarcation between these three systems are clear and distinct, and should be kept so in all legislative enactments.

The objects of these Fraternal Orders or Associations, as incorporated in their fundamental laws, will be found substantially as follows:

Now I hold that the fraternal system is entirely different, separate and distinct from the old line or level premium system and the open business assessment system. Only those Societies, corporations or associations organized and carried on for the sole benefit of their members and beneficiaries, not for profit and gain, can be classed as legitimate fraternal beneficiary orders.

The mutual agreement between the Fraternal Society and the member is not a policy or contract like that entered into between a life insurance company and its policy-holder.

These beneficiary orders are cooperative bodies. The members mutually agree among themselves, through the laws of the order, enacted by their chosen representatives in the Grand or Supreme bodies, to protect each other and their families and dependents in case of sickness, disability or death by contributing a certain amount from time to time as required to provide for the payment of the sum specified in the certificate, or what one contribution would bring on the membership. No term endowment, tontine or any other form of speculative certificates are issued, neither can a certificate within the objects and purposes of a legitimate beneficiary order be made payable to the estate or the creditors of the member, nor can it be used as collateral for a loan to secure a creditor.

Hence it will be seen that the fraternal beneficiary system is purely cooperative, non-speculative and mutual. These associations cannot be called insurance companies. They do not furnish purely life insurance, nor can they be classed with the open business assessment associations. There is nothing in common between the fraternal system and the other two systems.

A few years ago another system was inaugurated with lodges and ritualistic work. The associations composing this system are known as endowment orders. Their objects are purely speculative—to benefit the living, healthy member. In some cases they provide for sick benefits, but the real purpose is to give the living, persistent-paying member, at a certain time, the amount of money his certificate calls for.

A great many who do not understand thoroughly the objects and purposes of the fraternal beneficiary system have confounded it with the open business assessment system, when, in fact, there is nothing in common between the two. They have also, unintentionally, of course, classed the endowment associations with the fraternal system, when the facts are that the former have not from their inception ever been recognized by the latter. They have been denied representation in the National Fraternal Congress because their objects and purposes were foreign to the system which that body represents.

There should be no friction between the old line insurance system, the open business assessment system, the endowment system and the fraternal beneficiary system. The business of the other systems has not suffered by reason of the fraternal beneficiary orders. On the contrary, the business of the old line companies, as shown by their annual reports, has increased more rapidly since the advent of the fraternal societies than ever before.

The reason for this is simply because the fraternal beneficiary societies are pioneers and educators. Tens of thousands of men and women join them and secure protection for those dependent upon them who could not afford to pay the cost of life insurance. They attend lodge meetings, discuss the principles of life protection, get interested in the proceedings of the lodge, see the benefits which their own disabled members and the widows, orphans and dependents of deceased members receive by reason of such membership, and also become thoroughly familiar with all the details of the business part of such organizations.

Men in this country, where wealth frequently changes hands, do not always remain poor or even in moderate circumstances. The wheel of fortune frequently brings them to the top, and then they can afford to purchase life insurance from the old line companies at the higher price.

They cannot get it in blocks of ten, twenty, fifty or one hundred thousand dollars from the fraternal societies, but having been thoroughly educated in the lodge room to realize the value of life protection, the old line life insurance agent can secure an application from them for a large amount of either ordinary life insurance or endowment insurance much easier than if they had never been members of a fraternal society.

As poverty is said to be the mother of crime, we believe that the protection thrown around American homes by the fraternal beneficiary system, now so strong in our country, has been instrumental in reducing crime. It certainly has reduced pauperism. Members of these orders do not become applicants for public charity. The fraternal ties that bind them together guarantee financial assistance in time of need.

As the fraternal beneficiary system has grown to be a power for good in our country, its friends and promoters believe that favorable legislation should be given it.

The uniform bill which has been submitted to you for consideration has been prepared by some of the best legal talent in the country, and after several years' careful consideration by the National Fraternal Congress itself. We feel that you will, after a thorough investigation, be convinced that it ought to pass and become a law in the District of Columbia.

It has been adopted by Michigan, Illinois, Iowa, and in New York, Massachusetts, Wisconsin, Minnesota and several other States with some minor changes. Our simple desire is to secure uniformity of statutory legislation throughout the United States.

No man connected with the Fraternal System possessed greater power in logical argument or more personal magnetism than Major N. S. Boynton. No man connected with the System had the influence in impressing upon the members of Fraternal Beneficiary Societies, and the public at large, including legislators, judges and insurance commissioners, his personal convictions concerning the distinguishing differences between what he was pleased to call "The Three Systems of Life Protection." The imprint of his thought is found in the reports of committees to the Congress, in legislative enactments and in decisions of courts of last resort.

Major Boynton was no less a master in ridicule and satire than in forceful argument, as the writer has good cause to know.

How unfortunate that this great and good man planted seeds which produced thorns and thistles! Not until he had sown broadcast and grown a great harvest of

erroneous ideas did he realize the untoward work that he had done! Well do I remember that night in Luddington, ten years later, when I had been furnished a cot in his bedroom that we might "lay at our ease for an undisturbed conference concerning the coming conflict with the boys on the morrow!" For years he had been my severest critic, but now by telegram he had summoned me to come to his aid in steering the old ship into a new channel. That night he opened up his heart to me and whatever of unfriendly feeling that I had ever entertained melted into regard and sympathy. He regretted his age because he could not start afresh in the reformations that he clearly recognized as of pressing necessity. He encouraged me to continue to do my utmost in undoing what he had done. He may have likewise unbosomed himself to others, but not to my knowledge. His change of opinion appeared complete and he largely credited the change to the recent progressive position taken by Mrs. Francis E. Burns and her associates in pressing reforms upon the Ladies of the Modern Maccabees. He said that it was Mrs. Burns who first caused him to stop and think of the serious situation into which he had brought the Knights. With all of his positive assertions and all of his dogmas publicly proclaimed and generally accepted, Major Boynton failed to comprehend the fundamental principles underlying mutual insurance protection until near the close of his brilliant career. For many years he labored under the conviction that the payment of \$1,000 as a "benefit" was different from \$1,000 paid as "indemnity," and that the business method to assure the certain payment of the *indemnity* was not necessary to guarantee the *benefit*. This conviction resulted from his original conception (for he was one of the Fathers of Fraternity) of the "Benefit" as a "Charity" or "Benevolence," and his belief that the hearts of the people would continuously and forever move them to make "donations" to satisfy the demands of Charity. He had a sad awakening to the reality that "cold business plans" were required to make possible of performance the promise to pay a designated sum of money, whether or not it be called a "Benefit" or "Indemnity."

"Experience teaches a dear school," and Major Boynton and many others would learn in no other.

The Constitution and Laws of the Congress were amended to conform to the text of the Uniform Bill, declaration 4 being as follows:

Fourth.—No fraternal society, order or association shall be entitled to representation in this Congress unless such society, order or association be formed or organized and carried on for the sole benefit of its members and their beneficiaries, and not for profit, having a lodge system, with ritualistic form of work and representative form of government, and making provision for the payment of benefits in case of death (with provision, if its laws so provide, for the payments of benefits in case of sickness, temporary or physical disability, either as the result of disease, accident or old age, provided the period in life at which payment of disability benefits on account of old age commences shall not be under seventy years), the fund for the payment of such benefits and the expenses of such association being derived from assessments or dues collected from its members, and death benefits payable to the families, heirs, blood relatives, affianced husband, or affianced wife of or persons dependent on the member; these principles being an obligated duty on all the members, to be discharged without compensation or pecuniary reward, the general membership attending to the general business of the order, and a fraternal interest in the welfare of each other a duty taught, recognized and practiced as the motive and bond of organization.

The Twelfth Annual Session of the National Fraternal Congress was held in Baltimore, November 15, 1898, and is memorable from the report of the "Committee on Rates" submitting a "Table of Mortality" and contribution rates deduced therefrom. This committee was composed of H. C. Sessions, Chairman; F. A. Draper and D. P. Markey. President James E. Shepard was a member ex officio. The Mortality

Table (modified as hereafter explained) is now widely known as the "National Fraternal Congress Table of Mortality," and has been made by many States a standard for valuation as well as for minimum contribution rates. Concerning the Mortality Table the committee said:

The Mortality Table hereinafter presented reflects the judgment of the committee, based as it is upon actual deaths, as being as low as possible, keeping in view safety and the minimum number of assessments contemplated by the table of rates.

The mass of data from which this Mortality Table is adjusted is so extensive that the conclusions reached have ample support as to its sufficiency. It can be applied to new business and old business at attained ages, when the latter is in good physical condition. Should such old business be below the average, then such impairment must be provided for by an addition to the rate of the table.

The Mortality Table as reported and published in 1898 had a defect due to arithmetical errors in the derivation of the columns of living and dying from the column of the probabilities of dying. There was also an abruptness of gradation at ages 44-45, which needed adjustment. I had no part in the construction of the original table, but I did present to the Chairman of the committee a regraduation of the probabilities of dying for ages above 40, which changed the number living and dying above age 44, and ended the Table at age 98 instead of age 99. This suggested change was adopted by the committee as the reconstructed Table (above age 40) reported to the Congress in 1899, and this is the one now known and accepted as the National Fraternal Congress Table of Mortality and which appears in this book. The committee submitted tables of contribution rates on the "Level Rate Plan," the "Step Rate Plan" and the "Modified Step Rate Plan." These several "Plans," with explanations by the committee, follow:

LEVEL RATES.

This table shows the lowest rates that can be deduced from the Mortality Table above. The full amount must be collected annually, and the portion not used to provide for current mortality must be invested at 4 per cent interest. The annual rate is calculated on the basis that the full amount is paid at the beginning of the year. The monthly rates are increased slightly to provide for the loss of interest due to that method of payment and the slightly less amount contributed by dying members.

Age.	Annual.	Monthly.	Age.	Annual.	Monthly.
21	\$10.62	\$.93	41	\$20.93	\$1.83
22	10.92	.96	42	21.80	1.91
23	11.24	.98	43	22.72	1.99
24	11.57	1.01	44	23.69	2.07
25	11.92	1.04	45	24.72	2.16
26	12.28	1.07	46	25.81	2.25
27	12.67	1.11	47	26.91*	2.35
28	13.08	1.14	48	28.20	2.45
29	13.51	1.18	49	29.51	2.58
30	13.96	1.22	50	30.98*	2.71
31	14.43	1.26	51	32.39	2.83
32	14.94	1.31	52	33.97	2.97
33	15.47	1.35	53	36.65	3.12
34	16.03	1.40	54	37.45	3.28
35	16.62	1.45	55	39.36	3.44
36	17.24	1.51	56	41.41	3.62
37	17.90	1.57	57	43.60	3.88
38	18.60	1.63	58	45.94	4.02
39	19.34	1.69	59	48.45	4.24
40	20.11	1.76	60	51.13	4.47

*Should be \$26.97 and \$30.90.

STEP RATES AND MODIFICATIONS.

Column 1 gives the age groups. Column 2 gives the annual rates for the natural step-rate to age 61, and level rate from that age for the balance of life. Column 3, the monthly rates, as derived from the annual rates with allowance for slight loss due to the method of payment. These two columns are the basis for calculating columns 4 and 5. Column 4 shows a modification of the natural step-rate by means of an accumulation of 15 cents per month, which is used to reduce the level cost from age 61 to \$3.00 per month. Column 5, a similar modification, but with an accumulation of 30 cents per month, and a level cost from age 61 to \$2.50 per month. Under either of these plans all members pay the same rates at the same attained ages. The purpose in view in these tables is to have a plan that requires but little detail in its operation, so as to be readily comprehended by the officers of the local lodges.

1 Ages.	2 Annual.	3 Monthly.	4 Monthly.	5 Monthly.
21-25	\$ 5.11	\$.45	\$.60	\$.75
26-30	5.40	.48	.63	.78
31-35	5.93	.52	.67	.82
36-40	6.71	.59	.74	.89
41-45	8.14	.72	.87	1.02
46-50	10.25	.90	1.05	1.20
51-55	13.82	1.21	1.36	1.51
56-60	19.60	1.72	1.87	2.02
61	54.01	4.73	3.00	2.50

ACCUMULATION TABLE.

The step-rate plan, as shown in Column 2, Table, can be modified to meet the necessities of different societies by varying the amount of the accumulation. The following table is submitted as a basic table for that purpose. It shows how an accumulation of \$1.00 per annum, paid in monthly installments, may be used to reduce the level cost after age 61, from the level rate of \$54.01. The table shows the amount of such reduction, based on age at entry, giving to each member the full benefit of the term of membership. Thus the member entering at 21 would secure an annual reduction of \$11.61, giving an annual cost from age 61 of \$42.40. The member entering at 36 would secure a reduction of \$4.71, giving annual cost from age 61 of \$49.30. The adjustment of annual cost after age 61 would only have to be made when the members reach age 61, the rates being the same for same attained ages from 21 to 60.

With this table as a basis, the annual accumulation necessary to secure greater reductions can be calculated. If the accumulation was \$2.00 per annum, the reduction would be twice that of the table, and so in proportion for any other amount of accumulation:

At age 61 the level rate is 54.01.

At each age at entry \$1.00 per year additional to natural step-rate paid as a special accumulation will give the following annual reduction from age 61.

Age.	Reduction.	Age.	Reduction.	Age.	Reduction.
21	\$11.61	31	\$6.52	41	\$3.28
22	11.00	32	6.13	42	3.03
23	10.41	33	5.75	43	2.79
24	9.85	34	5.39	44	2.55
25	9.30	35	5.04	45	2.33
26	8.80	36	4.71	46	2.13
27	8.30	37	4.40	47	1.93
28	7.82	38	4.10	48	1.74
29	7.36	39	3.81	49	1.56
30	6.93	40	3.53	50	1.39

The Table of Level Rates, as published in the proceedings of the Congress for 1898, 1899 and 1900, and produced above, have been copied widely, and are found in 1913 editions of publications issued by the Fraternal Monitor and the American Service Union, and in the constitution and laws of several Fraternal Orders.

condition. Should such old business be below the average, then such impairment must be provided for by an addition to the rate of the table.

On motion of Mr. Markey the report of the Special Committee was unanimously adopted. On motion of Mr. Stevenson the following resolution was unanimously adopted:

Resolved, That the Mortality Table presented by the Committee on Rates be recommended by this Congress as a proper guide for the adjustment of rates.

In 1900, at Boston, the National Fraternal Congress unanimously adopted the following resolution offered by Mr. D. D. Aitken, Chairman of the Committee on Rates:

Your committee, to whom was referred all matters pertaining to rates, would most respectfully report:

That, in its judgment, this Congress should recommend to the law-making power of all States and Provinces in the enactment of laws that will require all Fraternal Benefit Societies thereafter organized and not theretofore admitted to do business therein, to adopt rates not lower than is demonstrated to be necessary by the following mortality table, adopted by this Congress at its last meeting:

The Mortality Table (as published in this book) is then given, and the Committee continues:

Your Committee further recommend that the rates deduced from this Mortality Table and prepared by your Committee on Statistics, which are as follows, be recommended to the consideration of the States and Provinces as proper rates for the level-premium and step-rate plans where no scaling of certificates is made.

Then follows the tables of level premiums and step rates heretofore given.

Returning to the Proceedings of the Congress at Baltimore in 1898, I extract the following from the report of the Committee on Statutory Legislation:

In the Province of Quebec the law requires a deposit of \$5,000 with power of demanding an increase thereto from time to time, and has other objectionable features. The chairman of your committee had a personal interview in Quebec with the provincial authorities, and it is believed that with united effort a material modification can be obtained, and probably the main features of our uniform law adopted.

Virginia has passed a Fraternal Act in the lines of the uniform law.

In Georgia, a law, which on the face applies to assessment insurance, with a hostile administration of the Insurance Department, might be held applicable to Fraternal Orders. The present Commissioner does not so apply it. It would be wise to make the effort to have the exemption put in the law.

In Kentucky, legislation which was not satisfactory to our brethren was defeated. We are advised that the Uniform Bill can be secured there.

An attempt was started in Ohio to repeal the present law, the Uniform Bill, but was abandoned.

The Committee on Statutory Legislation reported to the Congress at Chicago in 1890 that the Parliament of Ontario had passed an Act that, in effect, denied Societies of the United States the privilege of doing business in that Province; that the effort to secure a law in Quebec failed and that the requirement of a deposit of \$5,000 was still in effect; that a bill passed the North Carolina Legislature on the line of the Uniform Bill, and that the Uniform Bill was adopted in Indiana and Kan-

sas. That a bill failed of passage in Oregon due to a division amongst the Fraternal Societies.

The provision of the Act of Ontario was as follows:

Unless the Society provides for its contracts upon lives at least to the extent of collecting from its members premiums not less than those set out in Schedule A, and such further sum as is sufficient to provide for the expenses of management, it is not admissible to register.

Another provision was as follows:

No company, Society, Association or organization incorporated after the tenth day of March, 1890, under Chapter 172 of The Revised Statutes of Ontario, 1887, or under Chapter 211 of The Revised Statutes of Ontario, 1897, shall undertake or effect or agree or offer to undertake or effect any contract of insurance within the meaning of Section 2.

The rates of Schedule A are known as the Hunter rates and are approximately the same as those recommended by the rate committee to the National Fraternal Congress. Dr. Oronhyatekha, as President of the National Fraternal Congress in his address in 1900 at the Boston session, set out in full for comparison the level-premium rate according to the National Fraternal Congress Table and according to those known as the Hunter rates and also those known as Blackadar's rates. Quotations will hereafter be made from Dr. Oronhyatekha's address and the schedules will be given in that connection.

History along the line of adequate rates was making rapid progress by the time of the fourteenth annual session of the National Fraternal Congress held in the city of Boston, August 28, 29, 30 and 31, 1900. The Committee on Credentials began to play its part in this drama by recommending the following:

Your Committee have become satisfied from an examination of some of the societies applying for admission that their rates of assessment are inadequate to provide for the benefits provided in their laws, but the Constitution of the Congress has no requirement or standard upon this point. We, therefore, recommend that the Committee on Constitution and Laws formulate and present for adoption at this session a provision which will enable this Committee to refuse admission to future applicants for admission to the Congress, when it is evident that their table of rates is clearly inadequate to provide for the successful carrying out of their contracts with their members.

A resolution to the above effect was adopted by the Congress. In the report of the Committee on Conference with the Insurance Commissioners the following appears:

In the course of its deliberations the joint committee spent a great deal of time in discussing the ever-present question of adequate rates in Fraternal Benefit Society business. The members of the committee representing the Insurance Departments insisted that their interest in all matters pertaining to the business of these societies was founded solely in the commission which they hold from the people of their respective States, empowering and directing them to protect their citizens, whose patronage is solicited by these societies, from the danger of imposition or loss arising either from intentional imposition or from inherent weakness or defects of the system. These superintendents seem to be unanimous in their opinion that the assessment rates in most of these societies are now fixed at a point below the normal cost of insurance, and that these rates, in the absence of further provision, are not adequate to successfully meet the obligations in the certificates issued to the members, and they insist that this constitutes an inherent weakness in the system which they are bound constantly to call attention to in the discharge of their obligations to the people of their States.

The joint committee was unanimously of the opinion that it would be imprac-

licable to insist by statute on any arbitrary rate of assessment for societies already organized and doing business, but it was the consensus of opinion in the committee that legislation might wisely be sought restricting societies hereafter organized, or seeking admission, to transact Fraternal Society business to a minimum rate of assessment per annum for benefits promised. And it was decided to recommend, both to the Fraternal Congress and to the National Association of Insurance Superintendents, that they jointly favor and encourage such legislation whenever and wherever practicable. Believing that such legislation would be extremely valuable to our societies in preventing unfair competition by newly organized societies offering inducements which long experience has convinced us can never be realized, and feeling that the effect of intelligent discussion of these subjects, both in and out of the Legislature, is toward a final determination desirable alike to the public and the Fraternal Beneficiary system, we advise the adoption of the recommendation by the Congress.

The Committee on Conference reported concerning the discussion of many other subjects, including the following:

The joint committee next took up the question as to whether or not societies should provide in the face of their certificates for the payment of a certain sum or a sum contingent upon the amount raised from one assessment. This has been a most prolific source of controversy between the societies and the departments. In Massachusetts and other Eastern States the departments hold that a Society depending for its mortuary fund upon the contributions of its members and having no capital stock as a basis of absolute promise, has no right to make any except a conditional promise of benefits; while in Missouri, Indiana and other Western States the departments have held exactly the reverse, laying out of sight the theory which is at the foundation of the business and placing their decisions upon the ground that the citizens of their States, whose interests they are safeguarding, should be told on the face of the contract to a definite certainty how much money that certificate will produce in case of their death. Your Committee believes that the construction by the Eastern States is the correct one, and that as the plan of raising funds to pay certificates depends absolutely on the voluntary payments of the members, that all promises made in reliance upon such contingent collections must of necessity be contingent promises, no matter what the form of words used in the face of the certificate may be.

I make the following excerpts from the address of President Oronhyatekha. Dr. Oronhyatekha was the head officer of the Independent Order of Foresters in Toronto, Ontario, and known as one of the ablest men of the Congress, and yet seriously he made the following statements to a body of intelligent men:

A commercial insurance company is formed in the first place to earn money for the directors and other shareholders and in the second place to give insurance benefits to its members or policy-holders. In other words, commercial insurance companies are organized and worked on the same principle as a sawmill, a flour mill or a cotton or other factory, viz.: to earn certain profits on the investments made by the owners. I apprehend I am not departing from the truth when I say that the directors and other owners of mills and factories never spend any sleepless nights thinking how best to promote the interests of the consumers. Their concern is more apt to be centered on the profits that can be legitimately made out of their mill or factory.

A Fraternal Benefit Society, on the other hand, is formed to give insurance and other benefits to its policy-holders or members at the lowest possible cost consistent with safety and permanence without the remotest thought of any profit for directors or shareholders. They are therefore more like public schools, hospitals or charities, which are organized and carried on to do the greatest good at a minimum cost, but absolutely without profit or gain to anyone, except to the scholars and other beneficiaries of the educational or other institutions of a civilized nation.

Dr. Oronhyatekha then gave comparative tables as follows:

WHOLE LIFE NET LEVEL RATES PER \$1,000 AT 4%.

DEATH BENEFIT ONLY.

Entry Age.	—N. F. C. Rates.—		—Hunter Rates—		Blackadar Annual Rates.
	Annual.	Monthly.	Annual.	Monthly.	
20	\$10.34	\$0.90	\$10.55	\$0.90	\$10.03
21	10.62	.93	10.91	.93	10.32
22	10.92	.96	11.28	.96	10.62
23	11.24	.98	11.66	.99	10.93
24	11.57	1.01	12.03	1.02	11.26
25	11.92	1.04	12.42	1.05	11.61
26	12.28	1.07	12.76	1.08	11.97
27	12.67	1.11	13.12	1.11	12.36
28	13.08	1.14	13.49	1.14	12.76
29	13.51	1.18	13.87	1.18	13.19
30	13.96	1.22	14.31	1.21	13.64
31	14.43	1.26	14.76	1.25	14.11
32	14.94	1.31	15.22	1.29	14.61
33	15.47	1.35	15.73	1.33	15.13
34	16.03	1.40	16.25	1.38	15.69
35	16.62	1.45	16.82	1.43	16.27
36	17.24	1.51	17.42	1.48	16.89
37	17.90	1.57	18.05	1.53	17.54
38	18.60	1.63	18.71	1.59	18.22
39	19.34	1.69	19.42	1.65	18.95
40	20.11	1.76	20.18	1.71	20.53
41	20.93	1.83	20.97	1.78	21.38
42	21.80	1.91	21.81	1.85	22.29
43	22.72	1.99	22.70	1.93	23.25
44	23.69	2.07	23.65	2.01	24.27
45	24.72	2.16	24.66	2.09	25.39
46	25.81	2.25	25.72	2.18	26.49
47	26.97	2.35	27.31	2.32	27.71
48	28.20	2.45	28.10	2.38	28.99
49	29.51	2.58	29.36	2.49	30.36
50	30.90	2.71	30.72	2.61	31.81
51	32.39	2.83	32.17	2.73	33.35
52	33.97	2.97	33.71	2.86	35.00
53	35.65	3.12	35.34	3.00	36.74
54	37.45	3.28	37.07	3.15	.....
55	39.36	3.44	38.94	3.30	.....
56	41.41	3.62	.....	.....	.....
57	43.60	3.88	.....	.....	.....
58	45.94	4.02	.....	.....	.....
59	48.45	4.24	.....	.....	.....
60	51.13	4.47	.....	.....	.....

NOTE.—The monthly rates at the older ages are too low, as hereinbefore explained. See correct N. F. C. monthly rates in tables of this book. In the schedules published the annual rates at ages 47 and 50 are given as \$26.91 and \$30.98. The above are correct.

The National Fraternal Congress Rates are those reported by the Special Committee on Rates as heretofore published. The Hunter rates were prepared by J. Howard Hunter, Superintendent of Insurance of Ontario. The Blackadar rates were prepared by A. K. Blackadar, Actuary of the Dominion Government at Ottawa.

Before the session of the National Fraternal Congress of 1901 there had been organized The Associated Fraternities of America at a meeting held in Chicago on January 21, of 1901. The reason for the organization is found in the 3rd and 4th paragraphs of the declaration of principles, which read as follows:

We hereby declare our uncompromising opposition to any and all legislation which would tend to restrict the rights of the membership of our society to self-government, and denounce as unwise, unfair and against public policy any statutory enactments for government and control of fraternal associations which do not apply expressly to all societies with equal force and effect.

We further declare that we believe all societies should charge adequate mortality rates for their promised benefits, and while we disclaim any attempt to curtail the rights of the membership of any association, to organize their beneficiary department in such form and conduct the same in such manner as to them shall seem most conducive to their happiness and welfare, we courteously and earnestly recommend that each association study its own system and experience to the end that the association will be able to collect from its contributions sufficient to insure safety and permanency.

The sentiment of those who organized the Associated Fraternities of America was voiced by Mr. Edwin M. Johnson in a well digested and forceful address. Mr. Johnson quoted at length from the resolutions passed by the National Fraternal Congress and the reports of the Committee on Conference (heretofore given in part), and then summed up his protest and criticism as follows:

Strange it did not occur to our brothers that new orders having a plan so much stronger than the plan of old orders, and practicing what the old orders professed to believe but did not practice—being, therefore, a creation so different from themselves—might not desire a membership. Especially should such a membership be desired among a class of orders that would apply a measure so different to new entrants from that which they apply to themselves—and especially, further, when those with whom they would affiliate would carry their requirements to the length of not only legislating rates, but other conditions that the young order must comply with which they did not propose to comply with themselves. Why should the young and healthy orders join their influence with the old orders and cooperate thereby to make laws and conditions against personal interest?

Many of the old orders have for years talked themselves and their members into a position of believing in low rates, desiring, of course, to present the thought that their own rates were the lowest. They always contended that their rates would always be the lowest, until Nature forced them to admit the contrary. They still believe in the benefit of talking "cheapness." To enable them to successfully do this, they would today, after more than a quarter of a century of experience and wrong practice, legislate the "competitor" into a position of having to collect a higher rate than the assessment of the older orders, even after the increased burdens they have loaded onto them.

It was difficult to defend the position that adequate rates should be applied to new organizations and not applied to the new members of old organizations, and as we shall see later on, Mr. Markey offered a resolution that all societies should adopt adequate rates by 1905.

The meeting in Chicago was a preliminary meeting for the organization of the Associated Fraternities of America, the first annual meeting being held in July, 1901, at Cambridge Springs, Pa. The following is a list of the Societies represented at that meeting:

Ancient Order of Gleaners.
Ancient Order of Red Cross.
American Catholic Union.
Brotherhood of American Yeomen.
Bankers' Fraternal Union.
Daughters of Columbia.
Fraternal Brotherhood of the World.
Fraternal Bankers' Reserve.

Fraternal Army of America.
Fraternal Tribunes.
Grand Fraternity.
Highland Nobles.
Home Guards of America.
Knights of Kadosh.
Knights and Ladies of Columbia.
Loyal Mystic Legion of America.

Mystic Workers.	Order of Washington.
Mutual Protective League.	Royal Circle.
Mystic Toilers.	Royal Fraternal Union.
Modern Tonties.	Sons and Daughters of Justice.
Modern Brotherhood of America.	Societies Des Artisans.
Modern Order of Praetorians.	The Chevaliers.
Missouri Fraternal Congress.	The Fraternal Censor.
National Protective League.	United Moderns.
Order of Americus.	Utopian Brotherhood of America.

Mr. Lee W. Squier was Chairman of the Committee on Jurisprudence and Legislation, and from his appointment at the organization of the Associated Fraternities of America in January, 1901, to July, 1901, he and his Committee were very active as will appear from his report given below :

Your Committee on Jurisprudence and Legislation beg leave to submit the following report to your first annual convention :

It hardly seems necessary for us to preface this report with the general statement, the truth of which must be recognized beforehand by all who have given any thought to the subject, that the work of this Committee, in the short time allotted for its accomplishment, has involved a large amount of correspondence and no little diplomacy and tact, owing to the fact that the field of inquiry and investigation has been so thoroughly traversed by the like committee of the National Fraternal Congress, and some insurance departments have misunderstood the object of this new association of fraternal societies. However, we take pleasure in remarking that in every case, when the object and aims of the Associated Fraternities have been courteously explained to the insurance commissioners of our several States, your committee has received prompt and kindly replies to its inquiries, and in many instances have been assured of the hearty cooperation of the insurance departments in the general efforts of the Associated Fraternities to reach a common basis of harmony and government satisfactory to the Fraternities on the one hand and to the insurance officials on the other. At the outset, therefore, we thank such insurance officials for their courtesy and consideration.

The following States have on their statute books what is known as the National Fraternal Congress Old Uniform Bill, before its minimum rate amendment, with here and there slight modifications, more or less local in their character, but not seriously affecting the real import of the bill, viz.: Michigan, Illinois, Wisconsin, Iowa, Nebraska, Missouri, Kansas, Ohio, Pennsylvania, New York, New Jersey, Connecticut, New Hampshire, District of Columbia, Maryland, Georgia, Alabama and South Carolina.

The Kansas law provides that no beneficiary certificates shall be issued by a new association, incorporated thereunder, until its benefit fund contains in cash paid in an amount equal to at least twice the death benefit promised in its smallest certificate; and no association can be admitted to do business in this State unless it is shown that one assessment upon its membership at the specified rates will produce sufficient funds to pay a claim in full under its largest certificate. The Kansas law also makes it unlawful for any association to use any portion of its mortuary or emergency fund for expenses.

The South Carolina, Alabama and District of Columbia laws make provision for withdrawal benefit after a period of from three to ten years, such withdrawal benefit not to exceed, however, the amount contributed by the withdrawing member.

The South Carolina law is similar to that of Ohio and some other States in the provision that no order can be authorized to do business within this State, until it has on deposit to the credit of the association for the payment of death and other claims, and which amount cannot be used for expenses, the sum of five thousand dollars (\$5,000), which if advanced by the trustees or other officers, may be repaid to them from the proceeds of an expense fund for this purpose.

The Maryland law contains a provision that no society can be authorized to do business in that State, if it promises to pay any withdrawal, surrender, endowment, old age or other benefit besides sickness, accident or death, unless it shall have first deposited with the Insurance Commissioner the sum of ten thousand dollars in divi-

dend-bearing securities satisfactory to said Commissioner as a guarantee that such certificates will be paid by it. However, if such society furnishes satisfactory evidence that it has in its home State such deposit it need not make the deposit in Maryland.

So far as the Committee has been able to ascertain, the following States have practically no law governing fraternal beneficiary societies, viz.: Rhode Island (provided they employ no paid agents), West Virginia, Oregon, California, Montana, Mississippi, and Florida.

The following States have laws exempting fraternal beneficiary societies from the operation of the insurance laws, but require annual reports, to-wit: Virginia, Delaware, and Kentucky. There are indications, however, that the day of reckoning is approaching in some of these States, as the Insurance Commissioner of one of them writes: "I regret to say this department has no jurisdiction over fraternal organizations."

Colorado has a law calling for the filing of articles of incorporation or association of fraternal societies and providing for the appointment of an attorney for the service of process. This law does not provide for the filing of annual reports, though it is believed that the general insurance laws of the State provide for this.

The Minnesota law places our societies in the same category with cooperative life, endowment and casualty companies, a classification which every true fraternalist will repudiate.

The Wisconsin law is especially burdensome in a financial way, as it provides for the collection of a total of ninety-three dollars for entrance to do business and annual renewal in that State—forty dollars of which goes to newspapers—truly a good example of the power of the press.

The State of South Dakota makes its general assessment insurance law applicable to fraternal beneficiary societies—another classification which many of the up-to-date fraternalists roundly repudiate.

And now we come to the legislation recently enacted or attempted. The National Fraternal Congress Bill, as amended in Boston, prescribing minimum rates, was adopted last winter in Maine, Vermont, Massachusetts, Indiana, North Dakota, Oklahoma and Washington. It failed in Pennsylvania, Wisconsin, Missouri, Nebraska, Wyoming, Texas, Minnesota and Oregon.

Your Committee has already said that the Associated Fraternities of America came into existence as an organization none too soon. On March 21, the very day of the organization of this association, the new National Fraternal Congress Bill went into effect in Maine. If the National Fraternal Congress is responsible for all the provisions of the Maine enactment, then it is high time that the fraternalists of America should awake to the danger that confronts them through the influence of the Fraternal Congress. The first section of the Maine law timidly announces that "Any such fraternal beneficiary association may create, maintain, disburse and apply a reserve or emergency fund in accordance with its by-laws or constitution." Notwithstanding this declaration in favor of self-government, section 7 of this law provides as follows: "Each such association hereafter organized under the provisions of this act, shall, on or before the 31st day of December in each year, deposit with the State Treasurer to the credit of its emergency or reserve fund not less than fifteen per cent of its total mortuary receipts for the year then ending, until the amount so deposited amounts to not less than fifty thousand dollars (\$50,000)."

This section also provides that "The Insurance Commissioner shall annually in February certify to the Treasurer of State the minimum amount of reserve fund required to be kept on deposit in the treasury by each association doing business under this act." This section also provides the manner in which the State shall proceed to administer these funds in its hands, for the satisfying of judgments against the association or in closing up the affairs of the society.

The law enacted in the State of Washington, on March 18, 1901, is the Boston Fraternal Congress Bill in its "Simon-pure" form, except that the expenses of examination is made two hundred dollars in associations having no reserve fund and four hundred dollars in the case of those that have a reserve fund.

The Wyoming legislature at its last session enacted a law similar to the first National Fraternal Congress Bill. In forwarding the Committee a copy of this law, the Auditor of State significantly writes: "This law is not like the one that was introduced. The uniform law recommended by the National Fraternal Congress was introduced in its entirety, and after it had been through the various committees, it

was amended and finally, the one enclosed is the result." Your Committee would be pleased to thank those whose influence thus saved the day in Wyoming.

The minimum rate measure was defeated in the Texas legislature "on account of opposition from the Societies themselves," as reported to your Committee by the Commissioner of that State. The Texas legislature passed a law providing for cancellation of certificate of authority upon the failure of a fraternity to pay any judgment.

The last session of the legislature in Arkansas adopted a law which provides that all fraternal beneficiary orders operating in that State shall give a bond of ten thousand dollars to the State, conditioned upon the prompt payment of claims in that State.

In concluding this survey of statutes in force or attempted for the regulation of fraternal beneficiary societies in the several States of the Union, your Committee desires to make these observations, to-wit:

1. After fifteen years of legislation proposed and urged by the National Fraternal Congress, there is a great deal of non-uniformity in the so-called uniform bill now on the statute books.

2. Owing to the national scope and character of fraternal beneficiary societies, there is the most urgent need of statutory legislation that shall be uniform, not in name only, but in fact in every State in the Union.

3. It is to be profoundly regretted that the National Fraternal Congress should have proposed discriminatory legislation that divides the fraternal forces of America just at the time when they should present an unbroken front before the entrenched hosts of our common enemy.

4. Every true fraternalist will welcome any just plan of harmonizing the forces in the fraternal field, so as to secure statutory legislation that shall be uniform throughout our common country in its application to all fraternal beneficiary societies with equal force and effect.

For ten years there was bitter contention between The National Fraternal Congress and the Associated Fraternities of America in respect of legislation in the different States. Where the National Fraternal Congress would undertake to have the uniform bill adopted, the Representatives of the Associated Fraternities of America would appear in opposition; where the Associated Fraternities would undertake to have legislation with regard to reserve funds and the permission of surrender values, then the Representatives of the National Fraternal Congress would appear in opposition.

The division between the Fraternal forces was extremely unfortunate, and I shall not go into detail of the history of legislation during the ten years 1901-1910. I come directly to the joint action of the two National bodies at Mobile in connection with the Convention of Insurance Commissioners in 1910, when a Uniform Bill was agreed upon between these three National Associations; that is, the National Fraternal Congress, the Associated Fraternities and the Convention of Insurance Commissioners. The results of this Conference and agreement was a bill to be recommended for enactment in the several States, and was known as the "Mobile Bill." At the Conference in Mobile with the Insurance Commissioners the representatives of the National Fraternal Congress were Chas. E. Piper and Abb Landis. The representatives of the Associated Fraternities were Arthur Burnett, Benjamin D. Smith, Lee W. Squier, Robert S. Iles, George Dyre Eldridge. In 1911 many of the States enacted into law the Uniform Bill agreed upon at Mobile. However, it was found that many societies still objected to some of the provisions of the Mobile Bill, and a general conference of representatives of the National Fraternal Congress, the Associated Fraternities of America and the Federated Fraternities were held in New York late in 1912, and a section added to the bill providing for a third form of valuation, and known as section 23b of the "New York Conference Bill." There was a large gathering of Fraternal representatives in New York, the National Fraternal Congress and the Associated Frater-

nities being represented by the same gentlemen who represented those bodies in Mobile in 1910. The New York Conference Bill has been enacted into law in a number of States. The main features of the Mobile Bill and the New York Conference Bill, which distinguish those measures from any other heretofore recommended by the Congress or other Fraternal bodies, were the provisions for valuation. The following are the main provisions of the New York Conference Bill:

THE NEW YORK CONFERENCE BILL.

Section 1. (Fraternal Benefit Societies Defined.) Any corporation, society, order or voluntary association, without capital stock, organized and carried on solely for the mutual benefit of its members and their beneficiaries, and not for profit, and having a lodge system with ritualistic form of work and representative form of government, and which shall make provision for the payment of benefits in accordance with Section 5 hereof, is hereby declared to be a Fraternal Benefit Society.

Section 2. (Lodge System Defined.) Any society having a supreme governing or legislative body and subordinate lodges or branches by whatever name known, into which members shall be elected, initiated and admitted in accordance with its constitution, laws, rules, regulations and prescribe ritualistic ceremonies, which subordinate lodges or branches shall be required by the laws of such society to hold regular or stated meetings at least once in each month, shall be deemed to be operating on the lodge system.

Section 3. (Representative Form of Government Defined.) Any such society shall be deemed to have a representative form of government when it shall provide in its constitution and laws for a supreme legislative or governing body, composed of representatives elected either by the members or by delegates elected directly or indirectly by the members, together with such other members as may be prescribed by its constitution and laws; provided, that the elective members shall constitute a majority in number and have not less than two-thirds of the votes, nor less than the votes required to amend its constitution and laws; and provided further, that the meetings of the supreme or governing body, and the election of officers, representatives or delegates shall be held as often as once in four years. The members, officers, representatives or delegates of a fraternal benefit society shall not vote by proxy.

Section 4. (Exemptions.) Except as herein provided, such societies shall be governed by this Act, and shall be exempt from all provisions of the insurance laws of this State, not only in governmental relations with the State, but for every other purpose, and no law hereinafter enacted shall apply to them, unless they be expressly designated therein.

Section 5. (Benefits.) Subsection 1. Every Society transacting business under this act shall provide for the payment of death benefits, and may provide for the payment of benefits in case of temporary or permanent physical disability, either as the result of disease, accident or old age; provided, the period of life at which the payment of benefits for disability on account of old age shall commence, shall not be under seventy years, and may provide for monuments or tombstones to the memory of its deceased members, and for the payment of funeral benefits. Such Society shall have the power to give a member, when permanently disabled or on attaining the age of seventy, all, or such portion of the face value of his certificate as the laws of the Society may provide; provided, that nothing in this act contained shall be so construed as to prevent the issuing of benefit certificates for a term of years less than the whole of life which are payable upon the death or disability of the member occurring within the term for which the benefit certificate may be issued. Such Society shall, upon written application of the member, have the power to accept a part of the periodical contributions in cash, and charge the remainder, not exceeding one-half of the periodical contribution, against the certificate with interest payable or compounded annually at a rate not lower than four per cent per annum; provided, that this privilege shall not be granted except to Societies which have readjusted or may hereafter readjust their rates of contributions, and to contracts affected by such readjustment.

Subsection 2. Any Society which shall show by the annual valuation hereinafter provided for that it is accumulating and maintaining the reserve not lower than the

usual reserve computed by the American Experience Table and four per cent interest, may grant to its members extended and paid-up protection, or such withdrawal equities as its constitution and laws may provide; provided, that such grants shall in no case exceed in value the portion of the reserve to the credit of such members to whom they are made.

Section 6 provides for the payment of death benefits for wife, husband, relative by blood to the fourth degree, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather, stepmother, stepchildren, children by legal adoption, or to a person or persons dependent upon the member; provided, that if after the issuance of the original certificate the member shall become dependent upon an incorporated charitable institution, he shall have the privilege, with the consent of the society, to make such institution his beneficiary.

Section 7 provides that any society may admit to beneficial membership any person not less than sixteen and not more than sixty years of age, who has been examined by a legally qualified physician.

Section 8 provides that every certificate issued by any society shall specify the amount of benefit provided thereby, and shall provide that the certificate, the charter or articles of incorporation, or, if a voluntary association, the articles of association, the constitution and laws of the society and the application for membership and medical examination, signed by the applicant, and all amendments to each thereof, shall constitute the agreement between the society and the member.

SECTION 9. (Funds.) SUBSECTION 1. Any society may create, maintain, invest, disburse and apply an emergency, surplus or other similar fund in accordance with its laws. Unless otherwise provided in the contract such funds shall be held, invested and disbursed for the use and benefit of the society, and no member or beneficiary shall have or acquire individual rights therein or become entitled to any apportionment or the surrender of any part thereof, except as provided in Subsection 2 of Section 5 of this Act. The funds from which benefits shall be paid and the funds from which the expenses of the society shall be defrayed shall be derived from periodical or other payments by the members of the society and accretions of said funds; provided, that no society, domestic or foreign, shall hereafter be incorporated or admitted to transact business in this State which does not provide for stated periodical contributions sufficient to provide for meeting the mortuary obligations contracted, when valued upon the basis of the National Fraternal Congress Table of Mortality as adopted by the National Fraternal Congress August 23, 1899, or any higher standard, with interest assumption not more than four per cent per annum, or write or accept members for temporary or permanent disability benefits except upon tables based upon reliable experience, with an interest assumption not higher than 4 per cent per annum.

SUBSECTION 2. Deferred payments or installments of claims shall be considered as fixed liabilities on the happening of the contingency upon which such payments or installments are thereafter to be paid. Such liability shall be the present value of such future payments or installments upon the rate of interest and mortality assumed by the society for valuation, and every society shall maintain a fund sufficient to meet such liability regardless of proposed future collections to meet any such liabilities.

Section 10 provides for the investment of funds.

Section 11 provides that the payments by members, in whatever form made, shall distinctly state the purpose of the same and the proportion thereof which may be used for expenses, and that no part of the money collected for mortuary or disability purposes or the net accretions of (on) either or any of said funds shall be used for expenses.

Section 12 provides for the organization of societies with not less than seven persons, a majority of whom are citizens of the State, and that the application for the charter must give the proposed name of the society, the purpose for which it is formed and the names, residences, official titles of all the officers, trustees, directors or other persons who are to have and exercise the general control and management of the affairs and that such articles of incorporation and a bond in the sum of five thousand dollars, with sureties approved by the Superintendent of Insurance, shall be filed with the Superintendent of Insurance. But that its certificate shall not be

issued until there have been secured at least 500 lives for at least \$1,000 each, and also applicants for death benefits have been regularly examined by legally qualified practicing physicians, nor until there shall be established ten subordinate lodges or branches into which said five hundred applicants have been initiated, nor until there has been submitted to the Superintendent of Insurance, under oath of the President and Secretary, a list of such applicants, giving their names, addresses, date examined, date approved, date initiated, name and number of the subordinate branch of which each applicant is a member, the amount of benefits to be granted, the rate of stated periodical contributions, which latter shall be sufficient to provide for meeting the mortuary obligation contracted, when valued for death benefits upon the basis of the National Fraternal Congress Table of Mortality, as adopted by the National Fraternal Congress August 23, 1899, or any higher standard at the option of the society, and for disability benefits by tables based upon reliable experience and for combined death and permanent total disability benefits by tables based upon reliable experience, with an interest assumption not higher than 4 per cent per annum. Then follows the usual preliminaries provided in the Uniform Bill before the society can commence business.

Section 13 provides that any society now engaged in transacting business in this State may exercise, after the passage of this Act, all of the rights conferred thereby, and all of the rights, powers, and privileges now exercised or possessed by it under its charter or articles of incorporation not inconsistent with this Act, if it be incorporated; or, if it be a voluntary association, it may incorporate hereunder.

Section 14 relates to mergers and transfers.

Section 15 provides for an annual license.

Section 16 provides for admission of a foreign society.

Section 17 provides for power of attorney and service of process.

Section 18 provides for the place of meeting and location of office.

Section 19 provides that there shall be no personal liability incurred by officers and members of the supreme, grand or any other subordinate body of any such society.

Section 20 provides that no subordinate body nor any of its subordinate officers or members shall have the power or authority to waive any of the provisions of the laws and constitution of the society.

Section 21 provides that no money or other benefits shall be liable to attachment, garnishment or other process, or be seized, taken, appropriated or applied by any legal or equitable process or operation of law to pay any debt or liability of a member or beneficiary, or any other person who may have a right thereunder, either before or after payment.

Section 22 provides for the amendment of the constitution and laws.

SECTION 23. (Annual Reports.) Every society transacting business in this State shall annually, on or before the first day of March, file with the Superintendent of Insurance, in such form as he may require, a statement under oath of its President and Secretary or corresponding officers, of its condition and standing on the thirty-first day of December next preceding, and of its transactions for the year ending on that date, and also shall furnish such other information as the Superintendent may deem necessary to a proper exhibit of its business and plan of working. The Superintendent may at other times require any further statement he may deem necessary to be made relating to such society.

In addition to the annual report herein required, each society shall annually report to the Superintendent a valuation of its certificates in force on December 31st, last preceding; excluding those issued within the year for which the report is filed, in cases where the contributions for the first year in whole or in part are used for current mortality and expenses; provided, the first report of valuation shall be made as of December 31, 1912. Such report of valuation shall show, as contingent liabilities, the present mid-year value of the promised benefits provided in the constitution and laws of such society under certificates then subject to valuation; and, as contingent assets, the present mid-year value of the future net contributions provided in the constitution and laws as the same are in practice actually collected. At the option of any society, in lieu of the above, the valuation may show the net value, and when computed in case of monthly contributions may be the mean of the terminal values for the end of the preceding and of the current insurance years.

Such valuation shall be certified by a competent accountant or actuary, or, at the request and expense of the society, verified by the actuary of the Department of Insurance of the home State of the society, and shall be filed with the Superintendent within ninety days after the submission of the last preceding annual report. The legal minimum standard of valuation for all certificates, except for disability benefits, shall be the National Fraternal Congress Table of Mortality as adopted by the National Fraternal Congress August 23, 1899, or, at the option of the society, any higher table; or, at its option, it may use a table based upon the society's own experience of at least twenty years and covering not less than one hundred thousand lives, with interest assumption not more than 4 per centum per annum. Each such valuation report shall set forth clearly and fully the mortality and interest basis and the method of valuation. Any society providing for disability benefits shall keep the net contributions for such benefits in a fund separate and apart from all other benefit and expense funds and the valuation of all other business of the society; provided, that where a combined contribution table is used by a society for both death and permanent total disability benefits the valuation shall be according to tables of reliable experience and in such case a separation of the funds shall not be required.

The valuation herein provided for shall not be considered or regarded as a test of the financial solvency of the society, but each society shall be held legally solvent so long as the funds in its possession are equal to or in excess of its matured liabilities.

Beginning with the year 1914, a report of such valuation and an explanation of the facts concerning the condition of the society thereby disclosed shall be printed and mailed to each beneficiary member of the society not later than June 1st of each year; or, in lieu thereof, such report of valuation and showing of the society's condition as thereby disclosed may be published in the society's official paper and the issue containing the same mailed to each beneficiary member of the society. The laws of such society shall provide that if the stated periodical contributions of the members are insufficient to pay all matured death and disability claims in full, and to provide for the creation and maintenance of the funds required by its laws, additional, increased or extra rates of contributions shall be collected from the members to meet such deficiency; and such laws may provide that, upon the written application or consent of the member, his certificate may be charged with its proportion of any deficiency disclosed by valuation, with interest not exceeding 5 per centum per annum.

SECTION 23a. (Provisions to Insure Future Security.) If the valuation of the certificates, as hereinbefore provided, on December 31, 1917, shall show that the present value of future net contributions, together with the admitted assets, is less than the present value of the promised benefits and accrued liabilities, such society shall thereafter maintain said financial condition at each succeeding triennial valuation in respect of the degree of deficiency as shown in the valuation as of December 31, 1917. If at any succeeding triennial valuation such society does not show at least the same condition the Superintendent shall direct that it thereafter comply with the requirements herein specified. If the next succeeding triennial valuation after the receipt of such notice shall show that the society has failed to maintain the condition required herein the Superintendent may, in the absence of good cause shown for such failure, institute proceedings for the dissolution of such society, in accordance with the provision of Section 24 of this Act, or, in the case of a foreign society, its license may be cancelled in the manner provided in this Act.

Any such society, shown by any triennial valuation, subsequent to December 31, 1917, not to have maintained the condition herein required, shall, within two years thereafter, make such improvement as to show a percentage of deficiency not greater than as of December 31, 1917, or thereafter, as to all new members admitted, be subject, so far as stated rates of contributions are concerned, to the provisions of Section 12 of this Act, applicable in the organization of new societies; provided, that the net mortuary or beneficiary contributions and funds of such new members shall be kept separate and apart from the other funds of the society. If such required improvement is not shown by the succeeding triennial valuation, then the said new members may be placed in a separate class and their certificates valued as an independent society in respect of contributions and funds.

SECTION 23b. In lieu of the requirements of Sections 23 and 23a, any society, accepting in its laws the provisions of this section, may value its certificates on a

basis, herein designated "accumulation basis," by crediting each member with the net amount contributed for each year and with interest at approximately the net rate earned and by charging him with his share of the losses for each year, herein designated "cost of insurance," and carrying the balance, if any, to his credit. The charge for the cost of insurance may be according to the actual experience of the society applied to a table of mortality recognized by the law of this State, and shall take into consideration the amount at risk during each year, which shall be the amount payable at death less the credit to the member. Except as specifically provided in its articles or laws or contracts no charge shall be carried forward from the first valuation hereunder against any member for any past share of losses exceeding the contributions and credit. If, after the first valuation, any member's share of losses for any year exceeds his credit including the contribution for the year, the contribution shall be increased to cover his share of the losses. Any such excess share of losses chargeable to any member may be paid out of a fund or contributions especially created or required for such purpose.

Any member may transfer to any plan adopted by the society with net rates on which tabular reserves are maintained and on such transfer shall be entitled to make such application of his credit as provided in the laws of the society.

Certificates issued, rerated or readjusted on a basis providing for adequate rates with adequate reserves to mature such certificates upon assumptions for mortality and interest recognized by the law of this State shall be valued on such basis, herein designated the "Tabular Basis"; provided, that if on the first valuation under this section a deficiency in reserve shall be shown for any such certificate the same shall be valued on the accumulation basis.

Whenever in any society having members upon the tabular basis and upon the accumulation basis the total of all costs of insurance provided for any year shall be insufficient to meet the actual death and disability losses for the year, the deficiency shall be met for the year from the available funds after setting aside all credits in the reserve; or from increased contributions or by an increase in the number of assessments applied to the society as a whole or to classes of members as may be specified in its laws. Savings from a lower amount of death losses may be returned in like manner as may be specified in its laws.

If the laws of the society so provide, the assets representing the reserves of any separate class of members may be carried separately for such class as if in an independent society, and the required reserve accumulation of such class so set apart shall not thereafter be mingled with the assets of other classes of the society.

A table showing the credits to individual members for each age and year of entry and showing opposite each credit the tabular reserve required on the whole life or other plan of insurance specified in the contract, according to assumptions for mortality and interest recognized by the law of this State and adopted by the society, shall be filed by the society with each annual report and also be furnished to each member before July 1st of each year.

In lieu of the aforesaid statement there may be furnished to each member within the same time a statement giving the credit for such member and giving the tabular reserve and level rate required for a transfer carrying out the plan of insurance specified in the contract. No table or statement need be made or furnished where the reserves are maintained on the tabular basis.

For this purpose individual bookkeeping accounts for each member shall not be required and all calculations may be made by actuarial methods.

Nothing herein contained shall prevent the maintenance of such surplus over and above the credits on the accumulation basis and the reserves on the tabular basis as the society may provide by or pursuant to its laws; nor be construed as giving to the individual member any right or claim to any such reserve or credit other than in manner as expressed in the contract and its laws; nor as making any such reserve or credits a liability in determining the legal solvency of the society.

SECTION 24. (Examination of Domestic Societies.) The Superintendent of Insurance, or any person he may appoint, shall have the power of visitation and examination into the affairs of any domestic society. He may employ assistants for the purpose of such examination, and he, or any person he may appoint, shall have free access to all the books, papers and documents that relate to the business of

the society and may summon and qualify as witness under oath and examine its officers, agents and employees or other persons in relation to the affairs, transactions and conditions of the society.

The expense of such examination shall be paid by the society examined, upon statement furnished by the Superintendent of Insurance, and the examination shall be made at least once in three years.

Whenever, after examination, the Superintendent of Insurance is satisfied that any domestic society has failed to comply with any provisions of this Act, or is exceeding its powers, or is not carrying out its contract in good faith, or is transacting business fraudulently; or whenever any domestic society, after the existence of one year or more, shall have a membership of less than 400 (or shall determine to discontinue business), the Superintendent of Insurance may present the facts relating thereto to the Attorney-General, who shall, if he deem the circumstances warrant, commence an action in *quo warranto* in a court of competent jurisdiction, and such court shall thereupon notify the officers of such society of a hearing, and if it shall then appear that such society should be closed, said society shall be enjoined from carrying on any further business and some person shall be appointed receiver of such society, and shall proceed at once to take possession of the books, papers, moneys and other assets of the society and to distribute its funds to those entitled thereto.

No such proceedings shall be commenced by the Attorney-General against any such society until after notice has been duly served on the chief executive officers of the society and a reasonable opportunity given to it, on a date to be named in said notice, to show cause why such proceedings should not be commenced.

SECTION 25. (Application for Receiver, etc.) No application for injunction against or proceedings for the dissolution of, or the appointment of a receiver for any such domestic society, or branch thereof, shall be entertained by any court in this State unless the same is made by the Attorney-General.

SECTION 26. (Examination of Foreign Societies.) The Superintendent of Insurance, or any person whom he may appoint, may examine any foreign society transacting or applying for admission to transact business in this State. The said Superintendent may employ assistants and he, or any person he may appoint, shall have free access to all the books, papers and documents that relate to the business of the society, and may summon and qualify as witness under oath and examine its officers, agents and employees and other persons in relation to the affairs, transactions and conditions of the society. He may, in his discretion, accept in lieu of such examination the examination of the Insurance Department of the State, territory, district, province or country where such society is organized. The actual expenses of examiners making any such examination shall be paid by the society upon statement furnished by the Superintendent of Insurance.

If any such society or its officers refuse to submit to such examination or to comply with the provisions of the section relative thereto, the authority of such society to write new business in this State shall be suspended or license refused until satisfactory evidence is furnished the Superintendent relating to the condition and affairs of the society, and during such suspension the society shall not write new business in this State.

SECTION 27. (No adverse Publications.) Pending, during or after an examination or investigation of any such society, either domestic or foreign, the Superintendent of Insurance shall make public no financial statement, report or finding, nor shall he permit to become public any financial statement, report or finding affecting the status, standing or rights of any such society, until a copy thereof shall have been served upon such society at its home office, nor until such society shall have been afforded a reasonable opportunity to answer any such financial statement, report or finding, and to make such showing in connection therewith as it may desire.

SECTION 28. (Revocation of License.) When the Superintendent of Insurance on investigation is satisfied that any foreign society transacting business under this Act has exceeded its powers, or has failed to comply with any provisions of this Act, or is conducting business fraudulently, or is not carrying out its contract in good faith, he shall notify the society of his findings, and state in writing the grounds of his dissatisfaction, and after reasonable notice require said society, on a date named, to show cause why its license should not be revoked. If on the date named in said

notice such objections have not been removed to the satisfaction of the said Superintendent, or the society does not present good and sufficient reasons why its authority to transact business in this State should not at that time be revoked, he may revoke the authority of the society to continue business in this State. All decisions and findings of the Superintendent made under the provisions of this section may be reviewed by proper proceedings in any court of competent jurisdiction, as provided in Section 16 of this Act.

Section 29 provides for the exemption of certain societies, such as the Masons, Odd Fellows or Knights of Pythias (exclusive of the Insurance Department) and the Junior Order of United American Mechanics (exclusive of the Beneficiary Degree or Insurance Branch), and societies which limit their membership to any one hazardous occupation, or to similar societies which do not issue insurance certificate, nor to an association of local lodges of a society now doing business in this State which provides death benefits not exceeding five hundred dollars to any one person, or disability benefits not exceeding three hundred dollars in any one year to any one person, or both, nor to any contracts of re-insurance business on such plan in this State, nor to domestic societies which limit their membership to the employes of a particular city or town, designated firm, business house or corporation, nor to orders or associations of a purely religious, charitable and benevolent description which do not provide for a death benefit of more than one hundred dollars or for disability benefits of more than one hundred and fifty dollars to any one person in any one year.

Section 29 also provides that any fraternal benefit society heretofore organized and incorporated and operating within the definition set forth in Sections 1, 2 and 3 of this Act and providing for benefits in case of death or disability resulting solely from accidents, but which does not obligate itself to pay death or sick benefits, may be licensed under the provisions of this Act, and shall have all the privileges and shall be subject to all the provisions and regulations of this Act, except that the provisions of this Act requiring medical examinations, valuations of benefit certificates, and that the certificate shall specify the amount of benefits, shall not apply to such society.

Section 30 provides that every fraternal benefit society organized or licensed under this Act is hereby declared to be a charitable and benevolent institution, and all of its funds shall be exempt from all and every State, county, district, municipal and school tax, other than taxes on real estate and office equipment.

Section 31 provides for penalties for the violations of any of the provisions of the Act.

Section 32 repeals all Acts or parts of Acts inconsistent with this Act.

To July 1, 1913, the "New York Conference Bill" had been enacted into law by Arizona, Connecticut, Idaho, Michigan, New Hampshire, New York, North Carolina, North Dakota, Rhode Island, Tennessee, Texas, Wisconsin, and Wyoming—13.

To the same date the "Mobile Bill" (which does not include Section 23b, but requires annual valuation and triennial improvement of 5 per cent if degree of solvency is below 90 per cent) had been enacted into law by Alabama, California, Colorado, Louisiana, Maryland, Missouri, Montana, Ohio, Oregon, Utah, and Washington—11.

Massachusetts had enacted a law virtually the same as the "Mobile Bill," excepting 23a—1.

The "N. F. C. Uniform Bill" had been enacted into law by Indiana, Iowa, Maine, Minnesota, Oklahoma, and Vermont—6.

The "Mobile Bill" was in force by department rulings in Mississippi and South Carolina—2.

There is no provision for valuation in the "N. F. C. Uniform Bill," but there is a provision which enables the Commissioner to call for "such further information as he deems necessary to a proper exhibit of its business and plan of working," and in the exercise of this authorized discretion it is understood that the Commissioners

of the six States where that bill is the law will demand a valuation report. Therefore, beginning with 1914, the fraternal societies doing business in the thirty-three above named States, must report valuation results as of December 31, 1913, and annually thereafter, and the results must be made known to the membership.

On good authority, it is stated that all commissioners belonging to the National Convention of Insurance Commissioners (which will probably include the commissioners of all of the States) will use the Uniform Fraternal Blank for annual reports, which will require valuation returns. Hence it appears that there will be a general demand in 1914 for the valuation of all fraternal beneficiary societies now doing business in the United States, since all commissioners have the discretionary power to call for "further information."

The States not above enumerated have general laws or exemption laws in respect of fraternal societies, and it is anticipated that all, or at least the most, of the States will soon have on their statute books a uniform bill known as the New York Conference Bill.

There have been no material changes in the laws of the Dominion or the Provinces of Canada, but the Government at Ottawa is now considering the advisability of recommending to the Parliament the passage of a law similar to that of the New York Conference Bill, or at least which will provide for valuations of certificates. There was special legislation in the Province of Ontario for the benefit of the Independent Order of Foresters, and which is virtually the charter of that organization. Under that charter the readjustment of the old class of members who entered the society prior to 1898 was made and has created considerable friction between the Independent Order of Foresters and some Insurance Departments, especially that of Wisconsin. It appears that what is permissible under the Act of Ontario is not allowed in the State of Wisconsin. At least that is the representation made by the Insurance Commissioner of that State. At this writing there is an unfortunate contention between the Insurance Commissioner of Wisconsin and the Independent Order of Foresters, and it now appears that several other commissioners will join with the Commissioner of Wisconsin in certain demands upon the Society, which are resisted by the officials of that organization. Otherwise than this difference it would appear that all of the fraternal beneficiary societies and the insurance commissioners are agreed upon the provisions of the uniform bill as hereinbefore set forth.

Not only has there been an agreement upon the provisions for State legislation, but there was a consummation of fraternal amity by the consolidation of the National Fraternal Congress and the Associated Fraternities into one organization to be known as the National Fraternal Congress of America. This most desirable and commendable act resulted from a meeting of both associations during the same week in the city of Chicago, in August, 1913. There still remains the independent organization known as the Federated Fraternities. Though requests have been made, I have not been furnished with the proceedings of that organization, and unfortunately my engagements have been such that I have been unable to attend the meetings either in 1913 or in previous years. For sixteen years I have attended the annual sessions of the National Fraternal Congress and with one exception have also attended the annual meetings of the Associated Fraternities of America. I have had closer relations with the National Fraternal Congress and have been honored with representation on its Committee on Statutory Legislation, as well as being appointed as a special representative in the many conferences held with the Insurance Commissioners in conjunction with the representatives of the Associated Fraternities. I have been cordially received into the meetings of both of these National Associations during

the ten years when they were not agreed upon public policy. I have read many papers before both organizations and have tried to do my part, not only in securing proper legislation for the fraternal systems, but in establishing rates of contribution that would provide for the benefits promised.

I have quoted liberally from the proceedings of the National Fraternal Congress up to 1901, but have passed over the ten years when there was contention between the fraternal forces. While there was little real progress towards desirable legislation during that period, nevertheless there were many things accomplished by co-operation between the two national bodies and the Convention of Insurance Commissioners and probably the time was not lost considering the accomplishment in 1910 in the way of the Mobile Bill and in 1912 in the agreement upon the New York Conference Bill, which latter was not only agreed to by the National Fraternal Congress and the Associated Fraternities of America and the National Convention of Insurance Commissioners, but as well by the Federated Fraternities.

However, the part played by the Associated Fraternities was that of the leading character during the eventful decade, 1901-1911, and this history would not be complete without some reference to its policies and personnel.

The President of the first annual meeting, Mr. C. H. Robinson, was a man of culture who had made an enviable reputation as a lawyer and lawmaker in Iowa before identifying himself with the Brotherhood of American Yeomen.

The first Secretary, Mr. Edmund Jackson, had been connected with active fraternal work until he was generally and favorably known as a man worthy to become a leader in the new movement. He was then Secretary of the Mystic Workers of the World.

There were few Societies amongst those represented at the first annual meeting that had been in business for ten years, but there were many intelligent and earnest men amongst the representatives. The following names will be recognized as those of faithful and successful officials of well-known Fraternal Beneficiary Societies: G. H. Slocum, John J. Coyle, C. B. Paul, George R. McKay, J. E. Williams, James M. Godell, B. W. Blanchard (editor and writer and chicken fancier), A. L. Craig, Frederick Gaston, J. L. Rose, G. J. Eblen, Orman Kennedy, J. H. Burtner, E. E. Burson, J. F. Taake, T. B. Hanley, E. L. Balz, Lee W. Squier, C. B. Gardner, W. R. Eidson, George A. Scott, J. C. Desaulmiers, and Henri Roy. At the succeeding meeting there came into prominence William Koch, W. E. Davy, Robert Rexdale, Miss Annie O'Connor, J. S. Dailey, Chas. F. Hatfield, M. L. Campbell, H. E. V. Porter, G. L. Peterson, J. L. Mitchell, N. J. Hein, J. F. Sherer, E. W. Donovan, Hugh R. Moffit, and C. E. Corlett.

Each meeting was an interesting one. Valuable papers and intelligent discussion never failed to make the annual Conventions notable. From the beginning valuation and adequate rates were popular topics. There was opposition to what was characterized as the "Force Bill" of the National Fraternal Congress, but there was no opposition to the proper provision for benefits promised.

The Associated Fraternities adopted a "Uniform Bill" and urged it vigorously as a substitute for that advocated by the National Fraternal Congress.

The Insurance Commissioners generally stood with the Congress and the Congress Bill was enacted into law in several States during the decade 1901-1910.

On the whole, little progress was made in securing desirable legislation during the ten years because of the disagreement between these two National Fraternal Organizations.

Each year there were conferences between the representatives of the National Fraternal Congress, the Associated Fraternities and the Convention of Insurance Commissioners, and sometimes there was a tentative truce and sometimes there were discouraging dissensions.

The Commissioners would become impatient and undertake to draft their own Uniform Bill, and once (at Baltimore, in 1903) framed a bill which made the Actuaries' Combined Experience Table of Mortality the standard for "minimum" rates.

There arose such differences over the question of rate legislation that several societies withdrew from the National Fraternal Congress and became identified with Associated Fraternities of America. Amongst them were the Woodmen of the World and the Modern Woodmen of America, two of the largest Societies in America.

I witnessed division amongst my friends and clients, and, though to my disadvantage in a business way, my convictions forced personal participation in the debates as well as in the conferences, and thereby at least I had the advantage of first-hand knowledge of all circumstances and conditions affecting and incident to the Fraternal System during this turbulent period.

My purpose from the beginning of my activity was to benefit the cause, and in carrying out this purpose I have often done and said things which resulted in the loss of patronage of Societies whose officials were close and esteemed friends. I mention this fact to indicate the spirit of the times in that a man should become thus involved who never had any official connection with any Society and whose professional interest would have been conserved best by maintaining pleasant business relations with all factions.

While not always in complete accord with the majority in the National Fraternal Congress, yet I conscientiously believed that it could accomplish greatest good for the Fraternal System and therefore I supported its policies. Notwithstanding this attitude, the Associated Fraternities of America always welcomed me to their meetings and, by invitation, I furnished papers for their proceedings and took part in their deliberations, and served many of the constituent Societies as an Actuary. This is recorded as an expression of appreciation.

From "Statistics Fraternal Societies," published by the Fraternal Monitor, and giving returns to January 1, 1913, I extract the following concerning Fraternal Beneficiary Societies:

Number of Beneficial Members	7,451,735
Number of Social Members	420,848
Total Number of Members	7,872,583
Total Number of Lodges	116,732
Protection in force January 1, 1913.....	\$9,128,191,000
Benefit paid in 1912.....	95,341,585
Total Assets	191,278,810
Total Liabilities	21,408,506
Total Income in 1912	128,156,023
Total Disbursements in 1912	109,370,581
Members Introduced in 1912	963,494
Protection written in 1912	\$974,795,500

Following is a list of the Societies doing business in 1912, and the years in which they were organized:

	Date organized.
Order Brith Abraham (U. S. Grand Lodge).....	1859
L'Union St. Joseph du Canada	1863

Catholic Family Protective Association	1868
United Workmen, Ancient Order of	1868
*Masonic Mutual Life Association	1869
Independent Order Free Sons of Israel	1871
United Workmen, Ancient Order of (New York)	1873
Artisans' Order of Mutual Protection	1873
Knights of Honor	1873
.Brotherhood of Local Firement and Enginemen	1873
*Odd Fellows Relief Association of Canada	1874
*Independent Order of Foresters	1874
United Workmen, Ancient Order of (Illinois)	1875
*United Order of Golden Cross	1876
*Catholic Mutual Benefit Association	1876
*United Workmen, Ancient Order of (Minnesota)	1877
*Catholic Knights of America	1877
*Royal Arcanum	1877
*Societe des Artisans Canadiens-Francais, La.	1877
Knights and Ladies of Honor	1877
*Knights of Pythias (Insurance Department)	1877
*Western Catholic Union	1877
*Improved Order of Heptasophs	1878
*Order of Mutual Protection	1878
Order of Scottish Clans	1878
*United Workmen, Ancient Order of (Washington)	1879
United Workmen, Ancient Order of (Kansas)	1879
*United Workmen, Ancient Order of (Ontario)	1879
United Workmen, Ancient Order of (Massachusetts)	1879
*United Order of the Pilgrim Fathers	1879
Iowa Legion of Honor	1879
Legion of Honor of Missouri	1879
*Roman Catholic Mutual Protective Society	1879
Mutual Aid Society of the German Lutheran Synod	1879
Massachusetts Catholic Order of Foresters	1879
Canadian Order of Foresters	1879
Order of Sparta	1880
*Catholic Mutual Benefit Association of Canada	1880
*Polish National Alliance	1880
*National Union	1881
*Knights of the Modern Maccabees	1881
Knights of Father Mathew	1881
Catholic Benevolent Legion	1881
*German Roman Catholic Knights of St. George	1881
*Knights of Columbus	1882
German Baptists' Life Association	1883
*Modern Woodmen of America	1883
*Knights of St. John and Malta	1883
*Catholic Order of Foresters	1883
*Knights of the Maccabees of the World	1883
*Legion of the Red Cross	1883
Brotherhood of Railroad Trainmen	1883
*Royal League	1883
*Royal Templars of Temperance (Canada)	1884
Order of Canadian Home Circles	1884
*Workmen's Sick and Death Benefit Fund of the U. S. A.	1884
Fraternal Mystic Circle	1885
Catholic Knights of Wisconsin	1885
Christian Burden Bearers' Association	1885
*Shield of Honor	1885
Order of Canadian Home Circle	1885
Grand Fraternity, The	1886
*Ladies of the Modern Maccabees	1886

*Empire State Degree of Honor	1886
United Workmen, Ancient Order of (Nebraska)	1886
*Protected Home Circle	1886
*Degree of Honor, A. O. U. W. of Kansas	1887
Independent Order of B'rith Abraham	1887
Canadian Order of Chosen Friends	1887
*New England Order of Protection	1887
United Commercial Travelers, Order of	1888
*United Workmen, Ancient Order of (South Dakota)	1889
*Loyal Association	1889
Independnt Order Free Sons of Judah	1890
National Slavonic Society of U. S. A.	1890
*Ladies' Catholic Benevolent Association	1890
Catholic Knights and Ladies of America	1890
*Woodmen of the World (Pacific Jurisdiction)	1890
Brotherhood of America	1890
*Fraternal Aid Association	1890
*National Protective Legion	1890
*Woodmen of the World (Sovereign Camp)	1891
Order of the Amaranth	1891
United Aid	1891
*Women's Catholic Order of Foresters	1891
*U. S. Letter Carriers' Mutual Benefit Association	1891
Catholic Knights of Ohio	1891
United Workmen Ancient Order of (New Jersey)	1892
*Knights and Ladies of Security	1892
United Workmen, Ancient Order of (Oklahoma)	1892
*German Beneficial Union	1892
Bohemian Salvonian Union	1892
*Ladies of the Maccabees of the World	1892
Union Fraternal League	1893
American Benefit Society	1893
Catholic Relief and Beneficiary Association	1893
Loyal Mystic Legion of America	1893
Independent Scandinavian Workingmen's Association	1893
*United Order of Foresters	1893
*Alliance Nationale	1893
Workmen's Benefit Association	1893
Woodmen of the World (Canadian Order)	1893
United Workmen, Ancient Order of (Iowa)	1893
*Ben-Hur, Supreme Tribe	1894
American Insurance Union	1894
*Ancient Order of Gleaners	1894
*United Artisans	1894
*National Benevolent Society	1894
Continental Beneficial Association	1894
United Workmen, Ancient Order of (West Virginia)	1895
*Loyal Guard, The	1895
*Life and Annuity Association	1895
Royal Neighbors of America	1895
North American Union	1895
United Workmen, Ancient Order of (N. Dakota)	1895
*Court of Honor	1895
*Order of Columbian Knights	1895
*Catholic Women's Benevolent Legion	1895
*Woodmen Circle	1895
United Benevolent Association	1895
*Fraternal Brotherhood	1896
*Mystic Workers of the World	1896
Order Knights of Joseph	1896
*Degree of Honor, Superior Lodge	1896

*Royal Highlanders	1896
*Fraternal Union of America	1896
Eastern Star Benevolent Fund of America	1896
Catholic Ladies of Columbia	1896
Occidental Mutual Benefit Association	1896
*Loyal Americans of the Republic	1896
*Association Canado-Americaine	1896
*Sons and Daughters of Justice	1897
*Modern American Fraternal Order	1897
*Brotherhood of American Yeomen	1897
*Women of Woodcraft	1897
*Modern Brotherhood of America	1897
*Mutual Protection League	1897
Modern Samaritans	1897
Western Bohemian Fraternal Association	1897
*Equitable Fraternal Union	1897
Patricians, The	1897
*New Era Association	1897
Royal Benefit Society	1897
Order of the Iroquois	1898
*Yeomen of America	1898
United Workmen, Ancient Order of (Arkansas)	1898
*Modern Order of Pratetorians	1899
*Home Guards of America	1899
Fraternal Reserve Life Association	1899
*Mystic Toilers	1899
North Star Benefit Association	1899
Daughters of Columbia	1899
United American Mechanics, Jr. Order (Ben. Deg.)	1899
Order of the White Cross	1900
Catholic Benevolent League of Indiana	1900
United Order of the Golden Star	1900
Fraternal Benefit League	1900
Workmen's Circle	1900
L'Union St. Jean-Batiste d'Amérique	1900
*Fraternal Bankers' Reserve Society	1901
*Heralds of Liberty	1901
Gold Reserve Life Association	1901
American Woodmen	1901
*Vesta Circle	1901
United Amer. Mechanics, Jr. Order (Funeral Ben. Dept.)	1901
United Workmen, Ancient Order of (Conn.)	1901
Beavers Reserve Fund Fraternity	1902
Order of the Golden Seal	1902
*National Americans	1902
*National Fraternal League	1902
*Fraternal Reserve Association	1902
*Aid Association for Lutherans	1902
*Independent Order of Puritans	1903
Lone Star Insurance Union	1903
American Stars of Equity	1903
*Columbian Woodmen	1903
Lincoln Annuity Union	1903
Modern Romans	1904
Kinsmans Mystic Senate	1904
*Farmers' Life Insurance Association	1905
Knights of Industry	1906
Independent Workmen's Circle	1906
*Homesteaders, The	1906
National Home Guard	1906

Daughters of America	1907
Order of Aztecs	1907
National Fraternal Society of the Deaf	1907
Union Fraternal Association	1908
Home Watchmen of the World	1908
*Benevolent Knights of America	1908
Texas Commercial Union	1908
*American Workmen	1909
*Southern Benevolent League	1909
Columbian Fraternal Association	1910
*Our United Brotherhood	1911
*Cycle of Equity	1911
Southern Woodmen	1911

*Societies that have employed Mr. Landis. The following have also engaged his services as an actuary, though their names do not appear in the Monitor list, making a total of 143 that he has served in a professional capacity.

- *The Sailors.
- *Colorado Grand Lodge Degree of Honor.
- *International Liberty Union.
- *Independent Order Shield of Honor.
- *St. Lawrence Life.
- *Common Brotherhood of America.
- *Young Men's Mutual Life Association.
- *U. S. Civil Service Retirement Association.
- *American Union.
- *International Ladies' Garment Workers' Union.
- *Independent Western Star Order.
- *Guild of the East.
- *National Protective Association.
- *Catholic Knights of Illinois.
- *Loyal Protective Ins. Co.
- *United Order Hotel Workmen.
- *Knights of Agriculture.
- *United National Association of P. O. Clerks.
- *Southern Ins. Union.
- *U. S. Postoffice Clerks' Mutual Benefit Association.
- *Birds of Freedom.
- *Methodist Ministers' Relief Association.
- *Modern Protective Association.
- *Fraternal Relief Association.
- *National Annuity.
- *National Mutual Relief Association.
- *Masons' Annuity.
- *The Pathfinders.
- *American Guild.
- *Keystone Guard.
- *Mason's Mutual Aid Association.
- *National Croation Society.
- *Mutual Aid Society of Lutherans.
- *A. O. U. W. Grand Jurisdiction of Tenn.
- *Army Aid Association.
- *Stork Fraternal Society.
- *Washington League of Knights and Ladies.
- *Highland Nobles.
- *Railway Postal Clerks' Association.
- *Western Commercial Travelers' Association.
- *The Americans.
- *Modern Knights of the American Home.
- *Methodist Benevolent Association.
- *Lincoln Fraternal Union.

LIFE INSURANCE COMPANIES.

Running through the entire history of the development and supervision of Fraternal Beneficiary Societies there is prominent the sentiment amongst fraternal officials that the regular life companies—"the Old Line Companies"—are continually lying in wait for the destruction of the Fraternal System.

The fraternal speakers and writers of papers, as seen from many previous quotations, characterize the life companies as "our common enemy," as "our natural enemy," as "our insidious foe," as "the instigator of ruinous legislation," as "a secret enemy always to be watched."

Even the judicial mind of Chairman Butler was influenced by the prevailing sentiment and uttered warnings against the life companies as the ever-present and controlling power over commissioners and legislators to the injury of fraternal orders, notwithstanding his candid admission that he had no evidence to support his suspicions.

For twenty-five years I have given exclusive attention to the interests of Fraternal Beneficiary Societies, but I have not neglected the opportunity to cultivate the acquaintance and seek the friendship of the actuaries of the life companies, and I have met and known many of the executive officers of those companies. Like Chairman Butler, of the Committee on Legislation, I have never been able to find any evidence that the life companies desired or connived at the ruin of Fraternal Beneficiary Societies; unlike Brother Butler, I have never suspected something unsupported by evidence.

The facts are that the executive officers of life companies have given very little thought to the Fraternal Beneficiary Societies. They know in a general way of the existence of fraternal orders, but the fraternal people would be surprised to learn how little they really know of the work of these great provident institutions, and what little consideration they have given to them.

The idea of antagonism has arisen from the action of field men and the insurance press which has followed agency criticism.

Those who live by commissions on business written necessarily must get business to live, and they have taken advantage of the defects and weaknesses of the fraternal to criticise them and divert business from them. It is the exception when the management of a life company has supported or encouraged the attacks made by agents, or the criticism indulged by the insurance papers.

But in respect of the action and attitude of the agents and insurance papers have they in fact misrepresented the Fraternal Societies? Have not the Societies given cause for criticism and laid themselves liable to attack?

Instead of pleading the baby-act, would it not have been better to have removed the cause of criticism and manfully met competition on a business basis?

Would it not have been better for the Societies that all of us, who have at heart their real interests, should have long ago acknowledged defects and sought their remedy rather than to complain of criticism and yet continue wrong methods?

Should we not, years ago, have acknowledged that the Societies were doing a life insurance business, instead of straining after distinguishing differences that would not stand the test of common sense analysis?

Should we not, years ago, have recognized the common sense principle that business methods alone will assure the success of a business enterprise, and have gone about this business of life insurance in a business-like way, and have prepared our organizations for any legitimate business competition, as well as have prepared our organizations for the performance of their promises?

In the eventful year of 1901 I urged upon the attention of the National Fraternal Congress the necessity for valuation—for taking an account of assets and liabilities—but my urgency was of no avail. The fraternal managers waited until conditions forced the agreement, at Mobile in 1910, concerning valuation.

Four years after 1901 I made an effort to secure action looking to legislation that would permit Juvenile Insurance, and the Committee on Statistics and Good of the Orders prepared a report from facts given by me, urging this matter upon the attention of the Congress; but fraternal managers passed it by, until now conditions make the need of it felt.

And now comes up the matter of "Group Insurance," and instead of recognizing its good features and securing legislation that will prevent Fraternal Beneficiary Societies from entering upon that method of granting protection, we hear nothing but criticism, and the old, old cry that it is a scheme of the "Old Line Companies" to ruin the Fraternal Societies.

My faith in the Fraternal System is so strong that I believe Fraternal Beneficiary Societies can adopt contribution rates as high as the highest premium rates of any life company and can do business under them; that they can bring their financial position to the valuation standard required of life companies; that they can make a greater success with child insurance and group insurance than can the life companies.

My faith in the Fraternal System is so strong that I believe that they can do without legislative favors and exemptions on the assumption and under the pretense of being "charitable and benevolent institutions" (see N. Y. Conference and other Uniform Bills) in respect of their funds and their insurance business.

Why this faith?

Because mutual cooperation is of the very essence of insurance protection and the most complete and effective cooperation is possible through the means at the command of the Fraternal Beneficiary Societies.

The life company organization is entirely void of the inherent power and cohesive character of the fraternal society.

Having had to do with the attempt at reconstructing the financial methods of more than one hundred of these societies, I am in position to speak advisedly of the advantages (and sometimes disadvantages) of local lodges, ritualistic forms and representative government.

My faith is based upon facts as I have dug them out of the experiences of these societies through personal investigation, and as I have obtained them from the investigations of others.

From my viewpoint, there is no doubt of the superior strength and efficiency given to cooperation through sound and safe business methods being combined with the fraternal, social and charitable features of the provident societies.

The adoption of "Group Insurance" by purely business corporations is convincing evidence of the appreciation by shrewd business men of the desirability of community cooperation.

Why managers and members of Fraternal Beneficiary Societies neglect the full advantage of such a combination of business and fraternity as is within their grasp will remain one of the mysteries of development and progress through human agencies.

It is not altogether clear in my own mind that I should have written this preface to the chapter of comments on Life Insurance Companies. Pertinent or not, I will let it stand.

HISTORICAL.

A detailed history is not intended; only brief references to the past shall be made in order to give the reader some idea of the period covered by the business of insurance in general and of life insurance in particular, and to establish the fact that the business itself is very simple and had its origin, not among the learned nor the "Napoleons of Finance," but among the common, working people. The conception of life insurance was not in the brain of any great philosopher, but came to the mind of the meek and lowly from promptings of brotherly love. It was not a product of the head, but of the heart.

Like religion and charity, insurance has been much abused, largely misused and greatly diverted from its original purpose of benefiting the masses through mutual cooperation.

The proper application of the principle of cooperation to life insurance has never been thoroughly understood by all who have appreciated the great power of the principle itself. This ignorance has been the cause of many failures of well-intentioned projects, as well as the cloak for hundreds of fraudulent schemes and speculative and disastrous ventures.

Through cooperation large sums can be accumulated by small contributions from each of a great many subscribers. If, by any means, a few persons can induce many other persons to favor them with such contributions, it is possible for each of the few to become enriched without any great burden upon or sacrifice from the many.

Again, if many persons will each make a small contribution to a general fund, and have such fund judiciously invested and managed, it is possible to so improve it as to give larger returns to each subscriber than he could have realized from earnings on the amount of his original contribution when separately invested.

Just as it is possible for a number of men united to do what one cannot perform, so, within limits, the aggregate use of many dollars will enable persons to take advantage of opportunities for investment and profit which are entirely beyond those who have only one dollar.

Recognition of the last proposition brought about Savings Banks, Building and Loan Associations and similar provident institutions.

Recognition of the first proposition has been responsible for some of the best and some of the worst cooperative organizations conceivable.

Where the suffering few have been relieved by the benevolent many immeasurable good has resulted.

Where the greedy and selfish few have profited by the pennies, nickles and dimes squeezed from the hard earnings of the impoverished many the most damnable of outrages have been perpetrated.

Life insurance has been established upon that principle of cooperation where the many contribute for the benefit of the few and whether or not the business of life insurance is of public utility or detriment depends upon the character of the few who profit from the contributions of the many.

When the few are widows and orphans saved from penury and want, then unqualified good comes from the contributions of the many.

The science of probabilities furnishes the basis for computations that render the business of life insurance safe and successful, and it requires very little alteration in mathematical formulas to make them apply as well to gambling and speculative contracts as to the chance of paying a death claim under an agreement that would alone benefit women and children.

When the science of chances and probabilities is employed to work out a scheme of mutual cooperation where indemnity for loss of support through the death or disability of the wage-earner is the prime object to be attained, then the result of operation makes it possible for men of limited means to assure protection to their families against want and deprivation, though life or health fail before other provision has been made for them.

When the same science is employed in the formulation of plans where the chances to benefit are in favor of the wealthy who are able to persist to the end of a tontine or accumulation period when a distribution of forfeited payments is made, then the result of operation degenerates into a gamble and demoralizing speculation.

I wish that space were allotted and the patience of close reading assured for a comprehensive presentation of the effects of cooperative effort during the last two hundred years.

The scope of the present-day insurance is broad and comprehensive, but we are not yet returned to the point of reckless risk which characterized the business in England just prior to the "Bubble Act" of 1719. Cornelius Walford thus describes that extravagant era of taking chances.

We should simply subject ourselves to the charge of romancing if we were, thus early, to rend aside the veil of a century, and assert the existence of companies for insuring against Housebreakers and Highwaymen—against lying, or death by drinking Geneva! Yet the climax of that period (the era of the South Sea Bubble) was only reached by a scheme in "Change Alley" for the insurance of female chastity, and another against divorces!

Walford designates the period from 1698 to 1760 as the era of "Speculative Assurance." It is worth while to give an idea of those times by quoting what he says of them:

That which strikes the historical reader as one of the most remarkable features of the times is the purposes for which many of the so-called Assurance Offices were got up. Here we find "A Mutual Assurance Company was formed to aid an adventurer with funds to raise a vessel which, laden with the treasures of the East, had been lost on her passage home; the peculiar features of the transaction being that if any of the association should die before the object was accomplished, their share was to be transferred to the remaining adventurers." This made the hazard a double one. Another company, having at its head three English peers, two bishops, four Irish peers, with many eminent merchants and gentlemen, petitioned the king that it might be incorporated for purchasing and improving forfeited and other estates in Great Britain, for granting annuities, and for insuring lives; seeing this will (were the words of the petition) unite by interest many of the King's subjects against the Pretender and his adherents forever.

But the distinguishing feature of the age was the "gambling" tendency of nearly all the offices. Under the title of "Insurance Wagers," every conceivable description of speculation was entered into. On one day we find the offices wagering £30 against £100 that King William could not reduce the City of Namur before a given date. The next, on the period of favor to be enjoyed by the mistresses of some foreign potentate. And the third day, on the sex of the Chevalier D'Eton, whether he was a *male*, as he pretended to be, or a *female*, as he was reputed to be. The duration of the lives of persons believed to be on their death bed was a common hazard; and the author of "Every Man His Own Brother" was not far wrong when he said the dissolution of persons, who saw themselves insured in the public papers at 90 per cent, was, not unlikely, hastened by such announcements.

The "Gambling Act," in the reign of George III., put an end to such preposterous undertakings.

It enacted that no insurance shall be made on the life of any person, or on any event whatsoever, where the person on whose account it shall be made shall have no interest, or by way of gaming or wagering; and that every such insurance shall be null and void. It further provides that it shall not be lawful to make any policy on the life of any person, or on any other event, without inserting therein, for what use, or on whose account such policy is so made; and where the insured has an interest in such life or event no greater sum shall be received from the insurer than the amount of the interest of the insured in such life or event.

From 1760 to 1815 the time has been called the "Transition Period" of life insurance.

In 1762 the Equitable Society was organized in England with an effort at scientific accuracy and for the purpose of protecting dependants from the loss of support by the death of the breadwinner. The contracts of insurance were entirely devoid of any investment, speculative or gambling features, there being no other inducement to become a member than the offer to pay a stated sum to named beneficiaries upon the event of death. Several other companies and societies were started prior to 1815, and an earnest investigation of mortality experiences was begun. Many friendly societies were organized, and altogether this period was marked by honest endeavor to place life insurance upon a sound, safe and conservative basis with an eye single to the good of the members. The character of the business is reflected in the petition for a charter of the Equitable Society when setting forth the purpose of the organization as follows:

That great numbers of H. M.'s subjects whose subsistence principally depends on the salaries, stipends, and other incomes payable to them during their natural lives, or on the profits arising from their several trades, occupations, labor and industry, are very desirous of entering into a society for assuring the lives of each other, in order to extend, after their decease, the benefit of their present incomes to their families and relations, who may otherwise be reduced to extreme poverty and distress by the premature death of their several husbands, fathers and friends, which humane intention the petitioners humbly apprehend cannot be effectually carried into execution without H. M.'s Royal Authority to incorporate them for that purpose.

Walford designates the period of 1816-1844 as the "Golden Age of Assurance Companies in Great Britain." Contrasting the period and the companies with those that had gone before, he says:

To speak of this as the Golden Age of Assurance Companies may seem to disparage those societies established at earlier dates. Our intention is not to do this. Indeed, those early companies which are still existing speak for themselves; they have all attained high positions despite the difficulties they had to encounter, and the doubt which, for a time, surrounded them. Of those still earliest societies, which have, happily, long since passed away, Dr. Price truly said that to call them impositions on the public, proceeding from ignorance, and supported by credulity and folly, was "too gentle a censure." But we shall be fully able to justify our position by a review of the advantages the companies of this period possessed over those which preceded them.

These advantages may be ranged under several heads. First, and chiefly, the more accurate data which scientific investigation had placed at their disposal. Next, the rapid improvement which had been made, and was still taking place, in the mortality of the kingdom. Third, the legislative encouragement which had then been newly bestowed upon life assurance. And, lastly, as rising out of all these, the improved public feeling which had set in in favor of such companies.

Although two or three British companies accepted some American risks, and the Pennsylvania Company for the Insurance of Lives and Granting of Annuities had commenced business in 1812, yet the real beginning of life insurance in the United States dates from the last year of this "Golden Age" in Great Britain, when the Mutual Life of New York actively entered the field. By 1847 the New York Life, New England Life, the Mutual Benefit, the State Life, the Connecticut Mutual, and Penn Mutual had commenced business, and it may be said that life insurance operation in this country had been successfully started.

In England the business had so far progressed that designing persons recognized the opportunity for turning it to selfish ends, and scores and hundreds of companies were set afloat and the undertakings rivaled those of the previous century. Walford stamps the period 1844-1862 as that of "Bubble Companies." He writes:

The period we have just passed over did much to popularize the practice of Life Assurance in this country. The speculative companies of a former period had passed out of memory. The principles of the existing offices were fast becoming consolidated; and the companies themselves recognized as amongst the most valued monetary institutions of the country. The magnitude of their transactions was only equalled or surpassed by those kindred institutions, banks; and the promptitude with which they met their engagements deservedly placed them high in public confidence. It was not to be supposed that such a state of things could long continue without a "dark side." Those who know most of human nature know, and deplore, that the best of institutions are the most liable to abuse. This has been proved more than once in the history of Life Insurance. The favorable results which have been achieved by sound management of the old offices—more particularly the bonuses of the *equitable*, which public rumor had extended even beyond their almost fabulous reality, had, coupled with a want of popular and correct knowledge of the principles and practice of Life Assurance, raised public expectation to a high pitch. To this circumstance, combined with the unlimited confidence before referred to, must we look for a solution of that blind reliance which was placed in many of the swindling schemes which were brought forward in the earlier years of the period we are entering on, and in the numerous abortive projects whose concoctors, after exhausting the large funds placed at their disposal, have left their dupes to ascertain the extent of their remaining liabilities through communications made to them by the officials of the Court of Chancery.

In "Martin Chuzzlewit," Charles Dickens graphically describes the offices of one of the "Bubble Companies," and gives an insight into the methods of business operation and the designs of the promoters.

Considerable space has been devoted to the early history, development and abuse of life insurance in Great Britain, because American companies were formed upon the English model, and naturally we could expect a repetition of the history, development and abuse of the business in this country, since human nature is virtually the same on both sides of the Atlantic.

It might be interesting and instructive to follow the history of the British companies after the Act of 1870, and it would be a lesson for American policy-holders to study a comparison that could be made between business managements of English and American companies. However, attention will now be confined to conditions in the United States, which directly and materially concern those for whom I am writing.

Several companies did a life insurance business in a limited way prior to 1842, but the real beginning was in 1843, when the Mutual Life of New York entered the field with premium rates based upon the recently published English Table of Mortality, which had been constructed (in 1838) from the combined experience of seventeen British and Scottish life offices. Up to 1861, at the beginning of the Civil War,

twenty-seven life companies had been formed and were in active operation. Several others had been chartered, and some of them were doing a local business, but the following are worthy of mention, all but four of them (marked with *) being now (1914) in operation. Two of the three, the New York Life Insurance & Trust Company and the Pennsylvania Company for Insurance of Lives and Granting Annuities, never did a large life insurance business, and both finally discontinued that branch and confined themselves to transactions as trust companies. The names, dates of organization and location of the twenty-seven follow:

	Organized.
1. Presbyterian Minister's Fund, Philadelphia.....	1759
2.* Penna. Co. for Insur. of L. & Granting An., Philadelphia.....	1812
3.* N. Y. Life Ins. & Trust Co., New York City	1830
4. Mutual Life Insurance Co., New York City	1842
5. New York Life Ins. Co., New York City	1843
6. New England Mutual Life Ins. Co., Boston.....	1843
7. State Mutual, Worcester, Mass.....	1844
8. Mutual Ben. Life Ins. Co., Newark, N. J.....	1845
9. Conn. Mutual Life Ins. Co., Hartford, Conn.....	1845
10. Penn. Mutual, Philadelphia	1847
11. Union Mut., Life Ins. Co., Augusta, Me.....	1848
12. National Life Ins. Co., Montpelier, Vt.....	1848
13.* Charter Oak Life Ins. Co., Hartford, Conn.....	1848
14. U. S. Life Ins. Co., New York City.....	1850
15. Manhattan Life Ins. Co., New York City.....	1850
16. Berkshire Life Ins. Co., Pittsfield, Mass.....	1850
17. Mass. Mutual Life Ins. Co., Springfield, Mass.....	1851
18. Phoenix Mutual Life Ins. Co., Hartford, Conn.....	1851
19. Aetna Life Insurance Co., Hartford, Conn.....	1851
20.* Knickerbocker Life Ins. Co., New York City.....	1853
21. German Mutual, St. Louis, Mo.....	1857
22. Northwestern Mutual, Milwaukee, Wis.....	1857
23. Equitable Life Assurance Soc. of U. S., New York.....	1859
24.* Guardian Mutual Life Insurance Co., New York.....	1859
25. Washington Life Insurance Co., New York.....	1860
26. Home Life Insurance Co., New York.....	1860
27. Germania Life Ins. Co., New York	1860

The years between 1842 and 1861 constituted the "Formative Period" of life insurance in the United States. The managers learned very little from the extended experience of companies in England, and there was much ignorance in management in respect of a sufficient accumulation for the protection of contracts. The taking of premium notes was a popular feature. Dividend "credits," or "certificates," was another feature that was condemned by experience. To indicate the crude notions of an adequate reserve the following is taken from the charter of the Home Life, as published in the 1867 report of the New York Insurance Superintendent:

The net profits are to be ascertained annually and such a proportion thereof as the board may determine shall be applied towards the accumulation of a reserve fund of \$200,000, and the remainder shall be apportioned to participating policy-holders.

There were no effective laws requiring valuation, and those companies which voluntarily made a valuation used six and seven per cent interest assumption. However, the companies were honestly and conservatively managed and remedies were applied as defects were disclosed by experience and practical operation.

In the decade 1861-71 hundreds of new companies were projected and started and the methods of the "Speculative Period" in England held sway.

The Insurance Superintendent of the State of New York, George W. Miller, in his report for the year 1871, under the heading of "Retrospective," wrote:

The last year has witnessed the continued development of the effects of the two policies which have prevailed in the management of companies, and in the conduct of the Insurance Department of this State. Prior to 1870 the business of life insurance had experienced an extraordinary if not a forced and unnatural growth. Many causes conduced to this result, among which was the policy, or want of policy in the administration of this department. Every facility and inducement for the organization of new companies with small capital was held out, whilst little, if anything, was done practically to prevent the inception and spread of practices and abuses which could lead to but one result—insolvency. From this inevitably follows dissolution, disappointment and depression. The state of the country, the inflation of the currency, and the general tendency to a profligate and abnormal conduct of all kinds of business, required the exercise of extraordinary intelligence and vigilance in the supervision of insurance, which unfortunately was not to be found in the New York department. The companies flourished, the department flourished; even the Superintendent flourished, and "all went merry as a marriage bell." Company after company was organized, office after office was opened with a display of gilded signs and luxurious furniture, which almost compelled the belief that the description of them, in Dickens' *Martin Chuzzlewit*, was intended as a satire upon American rather than British institutions.

The formation of companies, too many of which were faithfully photographed by Dickens, went on, until from seventeen which were doing business in this State upon the organization of the department in 1860, eight of which were New York companies, the number had become seventy-one in 1870, when the first Superintendent retired from office, forty-one of which were New York companies. In 1870 times had changed. With the change in the times came a change in the administration and policy of the department. The pretentious display of figures made by these gilded institutions, and published in the official annual reports, were at last to be brought to a practical test. That test, a thorough personal examination, in its first application revealed a rottenness truly startling.

Orlow W. Chapman succeeded Mr. Miller as Superintendent, and, in his report for 1872, he said:

The teachings of the past fourteen years' experience, although by no means conclusive are certainly interesting, important and highly suggestive. They indicate nothing against the wisdom or policy of life insurance, or the theory upon which it is based, or the beneficence of the system. On the other hand, when it is found, as facts show, that some of the companies entering into this aggregate, in the face of this discouraging downward tendency, have maintained a constantly increasing growth year after year, it presents something like a demonstration of the wisdom of its plans and correctness of its theories. For surely that business which is shown to be capable of steady and uninterrupted advancement in times of trial, such as life insurance has passed through during the last few years, must have in it the very strongest elements of prosperity, of safety and of merit.

John A. McCall, President of the New York Life Insurance Company, read a paper in 1898 before the National Convention of Insurance Commissioners in which he reviewed their history from 1871 to 1898. Following are some extracts from his paper:

At the time of the meeting of the First Convention of Insurance Officials, in May, 1871, American Life Insurance had passed through two distinctive periods, and had nearly reached the end of the third. In the first period life insurance was done almost entirely by proprietary companies, organized primarily for the transaction of fire insurance, banking and trust business. Following this came the period of the early mutuals and other profit-sharing companies, doing a life insurance business exclusively. The marked success of these organizations between 1843 and 1862

caused a great multiplication of life companies. Life insurance shared the fate of other industries of the time—flourished and grew with them, as later it suffered with them.

The nine years immediately following the First Convention must be accounted the most trying period in the history of American life insurance. The number of companies which ceased doing business in New York was forty-six. Only four reinsured in companies that remained solvent; only ten others paid their liabilities in full. Receivers' reports are incomplete, but a careful examination of such as are accessible show the total loss to policy-holders by failures among American life companies to be about thirty-five million dollars, nearly all of which occurred during this period.

The situation was more acute in New York than elsewhere because, of the forty-six companies which ceased doing new business, twenty-seven had their domicile in that State.

The loss to solvent companies of business, as well as the prestige during this period, was very great.

It has been the custom of writers who would exalt life insurance to give scant space to the discussion of the failures and losses of this period; but to my mind there is no period in life insurance history that deserves more careful study, and none that contains more valuable lessons to the life insurance managers. Why did these companies fail? A true and complete answer to that question would put every officer and every trustee of a life company on his guard against like causes and a like catastrophe. As we have already seen, these failures were contemporaneous with many other failures in the business world, and something must unquestionably be allowed for the great shrinkage in values, as measured by the currency of the country, between 1864 and 1870. But the companies that survived and increased in strength were obliged to meet the same conditions. How did they escape? A study of the report of this period shows but very little charged off to profit and loss by the failing companies; but a study of their condition at the time of failure shows a great gulf between actual and assumed values of assets. In many of these companies gross frauds had been practiced for years, and a thorough examination would have exposed them. In others, loans had been made on insufficient security and with evident profit to favored individuals. In some cases loans upon which neither interest nor taxes had been paid for years were carried on the books at their full face value.

It seems clear from this review that these failures resulted from bad management, in the broadest sense of the term. It was extravagant, wasteful, dishonest. It paid too much for services rendered; it did not take proper care of the results obtained. The data upon which it proceeded were not deceptive; no company failed because of an excessive death rate, nor (save in a single case) because it was impossible to realize a rate of interest equal to that upon which its premiums were cast. The assumption which failed was that the loading on the net premiums would equal expenses and losses on investments.

In no other business is failure so disastrous as in life insurance; in no other is it so unnecessary; in no other is it, therefore, so inexcusable. It is of no use to lay the blame of failure upon the law that makes a net valuation the test of solvency, because this law existed before most of these companies began business. That was one of the conditions of their life, to be prepared for and conformed to, as much as any other condition. As it is the province of history to teach us how we may avoid the mistakes of our predecessors, I venture to suggest the following as some of the safeguards suggested by this study.

1. The utmost care in making investments—security to be always the paramount consideration.
2. The necessity of frequent revaluations of securities, and of their rigid adjustment to changing conditions.
3. The close study of a company's business upon the principles of the "Gain and Loss Exhibit" now required by several Insurance Departments.
4. The assumption, for the purposes of practical administration, of a higher standard of reserve than that by which the company's solvency is tested under the law.

The first of these suggestions may reduce the rate of interest, but it will save

the principal; the second will prevent any serious reduction of assets by insurance officials; the third will locate the fault of the administration, if there be one; and the fourth will preserve a strip of neutral ground between the path the company has marked out for itself and the line to which it cannot come near with safety.

In 1879 the epidemic of failures which had set in nine years before had run its course; the patients were nearly all dead, and the business of the remaining companies began to improve.

The period from 1881 to the present time (1898) has been one of uninterrupted progress. There has been but one failure of importance and the business has steadily grown in public favor. While it required fourteen years to regain the volume of insurance and income reached in 1872 and 1873, it only required seven years more to double it. This time the increase came under healthful financial conditions; it came to companies which had been tried as by fire; and it came to stay. The notable features of this period have been a decline in the interest rate, the rise of industrial insurance, the liberalizing of the policy contract, and an increase in the expense rate.

I have said so much by way of criticism that I am sure no one will grudge me a paragraph in praise of the benefits which life insurance has conferred during the past twenty-seven years. The companies have, during that time, received from policy-holders over three thousand million dollars; they have paid over one thousand millions in death claims, and nearly as much more in endowments, annuities, dividends and surrender values.

Mr. McCall brought the history to the spring of 1898, which was about the beginning of the terrific race for new business between the "Three Giants"—the Mutual, the Equitable, and the New York Life. High pressure methods were the rule, and in any of the years from 1898 to 1905 the entire first premium, and more, was used to secure the policy. About the close of the year a determined effort would be made to write business, and agents would give all or most of their commissions to the prospect as an inducement for him to "sign on the dotted line."

General conditions in life insurance management were criticised by Insurance Commissioners to the extent that the Legislature of New York authorized an investigation in 1905 under the following resolution:

Whereas, It appears from a preliminary report of the State Superintendent of Insurance on the Equitable Life Assurance Society of New York that the interests of policy-holders and their beneficiaries in life insurance companies doing business in the State of New York are not properly safeguarded by existing laws, and that a revision of the insurance laws of the State should be undertaken; and

Whereas, The inquisitorial powers of the Superintendent of Insurance are limited to the examination of the officers and agents of the companies and their books with reference to their business, and with a view to their solvency chiefly, and it is expedient that as a basis for legislation the operations of such life insurance companies should be investigated as fully and as promptly as may be;

Resolved, If the Assembly concur, that a joint committee be appointed, consisting of three members of the Senate and five members of the General Assembly, which committee shall, after adjournment of the extraordinary session, proceed to investigate and examine into the business and affairs of life insurance companies doing business in the State of New York, with reference to the investments of said companies, the relation of the officers thereof to such investments, the relation of such companies to subsidiary corporations, the government and control of said companies, the contractual relations of said companies to their policy-holders, the cost of life insurance, the expenses of said companies and any other phase of the life insurance business deemed by the committee to be proper, for the purpose of drafting and reporting to the next session of the Legislature such a revision of the laws regulating and relating to life insurance in this State as said committee may deem proper.

Further resolved, That the said committee be, and it hereby is authorized and empowered to require and enforce the attendance of witnesses, and the production of books and papers, to administer oaths and to employ counsel, stenographers, clerks and such other employes as may be necessary for the purposes of the investigation.

And a sum not exceeding fifty thousand dollars (\$50,000) is hereby appropriated out of any moneys in the treasury, not otherwise appropriated, for the purposes of said committee.

Pursuant to this resolution, three members of the Senate and five members of the Assembly were appointed as a committee, with Senator William W. Armstrong as chairman of the committee, and Assemblyman Ezra P. Prentice, secretary. The other members of the committee were: Senators William J. Tully, Daniel J. Riordan, and Assemblymen Robert Lynn Cox, James T. Rodgers, William W. Wemple, John McKeown. The committee was assisted by Charles E. Hughes (now of the United States Supreme Court) and James McKeen as counsel and Matthew C. Fleming as assistant counsel, Miles M. Dawson as consulting actuary and Marvin Scudder as financial statistician.

The committee organized on August 1, 1905, and began its public hearings on September 6, 1905, continuing consecutively for fifty-seven sessions, the concluding session being held on the 30th of December, 1905.

To 1905 the general insurance laws in the several States provided, in a general way, for the supervision and regulation of life companies, with special reference always to the valuation of policies, which requirement had been made since its introduction in Massachusetts by Elizur Wright in the early fifties.

After the report of the Armstrong Committee, bills were passed by the Legislatures of nearly all of the States, with New York leading, that prescribed policy forms, limited expenses for securing business, provided for net surplus over and above the legal reserve fund, prohibited the writing of participating and non-participating policies by the same company, reduced the interest assumption in valuation of policies issued after a designated date, placed restrictions upon preliminary term policies, compelled the companies to dispose of corporate stocks, to discontinue the control of or financial relations with trust companies and brokerage houses and speculative syndicates, and extended the powers of Superintendents of Insurance in their examinations of any statistical reports made by the companies.

The reports for 1913 are not at hand, but the returns as of December 31, 1912, show:

	Ordinary Business.
Policies in force	8,159,103
Insurance in force	\$15,555,901,171
Policies written in 1912.....	1,285,210
Insurance written in 1912.....	\$ 2,240,434,665
Premiums received in 1912.....	472,062,710
Interest and other income in 1912.....	183,330,994
Total receipts in 1912.....	655,393,704
Total expenses in 1912	483,348,282
Total to policy-holders in 1912.....	367,007,717
Total assets December, 1912.....	3,597,650,447
Total liabilities December, 1912.....	3,168,194,661
Required Reserve Accumulation	2,988,642,224
Surplus	451,453,644

There were less than fifty life companies in 1905. There were more than one hundred and fifty in 1912. The great majority of the new companies are stock corporations.

The corporate management of the life companies is by policy-holders' meetings in "Mutual Companies;" by stockholders' meetings in "Stock Companies;" and by meetings composed of stockholders and policy-holders in "Mixed Companies."

It is a pet phrase of fraternal writers and speakers to declare that the life companies are primarily conducted for the profit of stockholders, while the conduct of fraternal orders is *not for profit*, but for the benefit of their members.

It is never well to misrepresent the facts. The Mutual Companies have no stockholders. The "profits" are limited in amount that can be paid to the stockholders of the Mixed Companies. The Stock, or Proprietary, Companies most commonly issue non-participating policies at comparatively low premium rates, and hence they voluntarily set a limit to the "profits" for their stockholders.

The real differences between the Life Companies and the Fraternal Beneficiary Societies, on the *business side*, are:

1. The contract of the Life Company is fixed, while that of the Fraternal Society is flexible.

2. The provision for expense of management is greater in the Life Company than in the Fraternal Society.

3. The mortality assumption is higher for the Life Company level premium than for the level contribution of the Fraternal Society.

4. The interest assumption is lower for the Life Company level premium than for the level contribution of the Fraternal Society.

5. The contractual relations between the Life Company and the policy-holders are those of a corporation to an individual, while the contractual relations between the Fraternal Society and the certificate holders are those of a mutual association in cooperative effort.

6. Because of the character of contractual relations on the basis of a bipartite agreement, the policy-holders in the Life Company are not subject to assessment even to save the corporate existence. The relations between the Fraternal Society and the certificate holders being mutually cooperative, the members occupy the dual position of insurer and insured and they are as much obligated to maintain the integrity of the insurance contracts as they are privileged to claim the benefits of those contracts. The policy-holders are obligated only to pay their stipulated premiums, and having discharged that obligation they are vested with the right to demand the benefit promised. The certificate holders must contribute on extra assessments when levied as a condition precedent to vested right in the demand for benefits promised.

It has always been a mystery to me why the whole argument in the case of Fraternal Societies *versus* Life Companies has been made upon any misstatements of the real issues, when the facts would so much better support the contention of the Societies.

OPEN ASSESSMENT ASSOCIATIONS.

The ill-repute of the Life Companies in the decade 1872-1882 brought forth what have been called Open Assessment Associations. The promoters successfully advertised them on the claim that they were organized as a protest against the high premiums and extravagant management of the Life Companies, and, at the same time, avoided the disadvantages of the lodge system of fraternal orders. They laid claim to representative form of government through direct vote in policy-holders' meetings held every one, two or three years. This, of course, was as much a farce as are similar meetings of Mutual Life Companies, but it served its purpose to delude the public.

I cannot improve upon the history of the Assessment Associations written by John A. McCall in 1898, and I quote him:

Another result of these same causes was that multitudes of men who felt the need of life insurance protection sought a substitute for it in cooperative societies. I am aware that there is well-founded objection to calling the operations of these societies insurance, and it will be stoutly maintained by some that there is but one system of real life insurance; nevertheless there may be many systems of post-mortem relief, and it is hardly worth while to quarrel about the name so long as we apprehend the fact. There is no question that many cooperative societies operating between 1870 and 1880, in spite of their imperfect system and because of honest management, furnished better protection to their patrons than the level-premium companies whose demise we have been considering—although the latter were organized upon plans that were unassailable, ran their course of wickedness under the aegis of the law, and died in the odor (a very bad odor, to be sure) of regularity. While the business of the level-premium companies that failed was but a small percentage of the whole, and there were always sound and well managed companies in the field, yet the losses were nevertheless great and widespread, and it was little comfort to one who had lost the accumulations of years to be told that he should have insured in a better company. A system that furnished (or even promised) present protection at low cost, and did not profess to accumulate money for future needs, appealed very strongly to men who did not understand theories of insurance, but who were angry and sore at heart over losses under a system that professed to be perfect.

There are no official data for ascertaining the number of co-operative and fraternal societies organized in the seventies, but there are now twenty of each class doing business in New York State, which were organized prior to 1880. The first Handbook of Assessment Insurance was published in 1886, and contained the statistics of 367 societies, 119 of which were organized prior to 1880. Reports were first required from such societies by the Pennsylvania Department in 1874, and by the Massachusetts and New York Departments in 1882. These societies have undertaken to supply post-mortem relief by levying its cost upon members in a variety of ways. There have been four plans of assessment insurance, all of which are still in use, but which may be stated in the order of their development and of their approach to the level-premium plan, as follows: (1) To assess all members alike for current cost only; (2) to assess, for current cost only, according to a table graduated for age at entrance; (3) to assess according to a table graduated for age at entrance, and lay aside an arbitrary sum or proportion of assessments for a reserve fund; (4) to charge a level premium, calculated upon assumptions which give rates approximating those of level-premium companies, lay aside a reserve fund on the same assumptions, and reserve the right to assess for any deficiency. The order in which these plans have arisen, as well as their nature and the actual workings of each, clearly demonstrate that if an organization would do what the level-premium companies guarantee to do, it must do it in their way, and that methods which require less *from* members provide less *for* members, are likely to miss the one great end of all insurance—namely, the certainty of indemnity when the loss occurs.

The ease with which such societies could be organized and their comparative freedom from official oversight until within a few years led at one time to a speculative craze in policies upon the lives of aged and invalid persons in Pennsylvania, and fraternal endowment societies have filched from the people of many States amounts which rival the losses of the failing level-premium companies. It must be observed also that the experience of these societies has not justified their philippics against the expense rate of the level-premium companies. The expense rate of the level-premium companies doing business in New York State in 1897 was less than twenty-three per cent of income, while in the cooperative societies it was over twenty-eight per cent of income.

The assessment plan of insurance has never been a success, and the numerous associations which operated under the three plans first named by Mr. McCall soon became involved in financial difficulties, and in the decade 1895-1905 hundreds of them failed or were merged into stronger associations or companies.

Those associations which operated under the fourth plan mentioned by Mr. McCall were theoretically the most perfect of life insurance organizations, and they should

have been able to continue business indefinitely and safely. However, they were ultimately forced into the ranks of the regular Life Companies through legislation against the Assessment Associations, with which they were classed.

The plan (numbered "4" by Mr. McCall) of these associations was known as the "Flexible Premium System," and in 1896 (two years prior to Mr. McCall's paper) I wrote a brochure, entitled "The Flexible Premium System—A Handbook for Field Men." I quote from the "Preface," or "Fore-Word":

If names were suggested by methods, insurance plans should be grouped under four heads: "Assessment," "Natural Premium," "Level Fixed Premium," and "Level Flexible Premium" Insurance.

The development of present insurance plans and methods has been slow, and the sharp lines of distinct differences have only been sufficiently apparent from the first to give distinguishing names to the two methods of "Assessment" and "Level Fixed Premium" Insurance.

Insurance by "Natural Premiums" was simply assessment insurance with a recognition of the Mortality Law that *the cost of insurance increases with increasing age*. But there have been few life associations which have adopted and operated under the pure "Natural Premium" plan, notwithstanding the fact that hundreds of concerns take the name of "Natural Premium Companies." Their methods do not justify the designation. Their rate cards and literature present premium charges which are held to be high enough to provide for a reserve that will render them level through the contract period.

Representation and calculation allege and indicate that these charges, in practical operation, will remain level and uniform, *unless future cost of insurance exceed past experience cost*. Only, in the latter event, is it contemplated to increase the rates; whereas, insurance by "Natural Premiums" contemplates a yearly increase of charges, from the age of entry until death, or the termination of the policy contract.

Evidently it is a misnomer to call such associations either "Natural Premium" or "Assessment" companies. Certainly "Natural Premium," strictly construed, gives no indication of their method of operation; and the only relation to "Assessment" insurance, is the provision in their contracts to increase rates to cover any increase in the cost of insurance. And most of these companies are removed from this mere semblance to "Assessment" insurance by making it optional with the policy-holder whether or not he pay an increased rate, or have the deficiency charged to his policy and deducted from the claim when it matures.

For those companies which base their rates upon experience cost, and have a stipulated level premium, no name so well describes them as that of "Flexible Premium"—the "flexibility" being conditioned upon change in insurance cost.

The 1896 Act of the Massachusetts Legislature, obliging all companies operating under the "Assessment Plan," to print "Assessment," in conspicuous letters, in their policies and on their literature, rate cards, etc., is a sure indication of future legislation which will force more definite distinction in the representations of insurance methods.

"Level Flexible Premium" insurance differs materially from any other method, and a general designation, which aptly applies to "Level Fixed Premium," "Assessment," or "Natural Premium" insurance, does not describe it.

Under present legislative conditions "Flexible Premium" companies must qualify under laws regulating "Assessment" insurance. "Level Fixed Premium Companies," seeing that "Level Flexible Premium" organizations are writing level premium insurance, under advantages secured to them through qualification under assessment laws, have inaugurated a movement to discredit assessment insurance in any form, even to that of the Flexible Premium. The Massachusetts Act, of 1896, smacks of paternalism in the nature of protection to the level fixed premium companies, and bears such evidences of favoritism as will not long be tolerated by the people. The discussion, however, which naturally comes from such attempted class legislation, will probably result in a better general understanding of insurance methods and plans.

The Assessment Associations which operated under the "Flexible Premium System" could not secure legislation that would distinguish them from the ordinary "Open Assessment Associations," and they could not continue under the general

laws for the supervision and regulation of Assessment Associations and consequently they qualified under the legal reserve laws for regular "old line" companies.

The "Safety Clause" in their contracts corresponded to the "right to levy extra assessments" reserved in their certificates by the Fraternal Beneficiary Societies that now base their contribution rates upon some standard table of mortality with an assumed interest earning an accumulation required to maintain rates level and uniform. This plan of the Fraternal Societies is theoretically and practically sound and I could not support it with a stronger statement than I made in 1896 in reference to the "Flexible Premium System." I am still enamored of the plan and I quote from the writing of eighteen years ago, that it may be applied to the flexible premium system of the level-rate Fraternal Beneficiary Societies of today:

Careful consideration and study of existing conditions in life insurance, as above set forth, some twenty years ago resulted in the formulation of the system known as the FLEXIBLE PREMIUM PLAN of LIFE INSURANCE, which

EQUALIZES THE COST,
CORRECTS THE ABUSES,
AVOIDS THE DANGERS, and
MAINTAINS THE SAFETY of INSURANCE to an UNEQUALLED DEGREE.

The calculations of the actuaries and the actual experience of insurance companies and societies served as a guide in fixing the premium rates, as well as the policy conditions. The result is that the rates are those which experience has shown to be sufficient in the past, and which will remain uniform and level so long as the past average of insurance cost is maintained.

The cost of insurance is equalized by requiring payments in excess of insurance needs during the earlier years, thus creating a reserve, as fully explained in illustrating the operation of level premium insurance. The flexible premium in nowise differs from the level premium in this respect, but under the most improved policy contracts, the company binds itself to keep each policy's proportion of the reserve fund equal to, or greater than, the difference between the present worth of the future net premiums and the present worth of the amount insured, thus enabling these companies to equalize and keep level the premium rates, in identically the same way as done by the old line or level-premium companies—with the marked advantage, however, in the privilege, under the flexible premium plan, of having the entire reserve fund always subject to the payment of all losses, instead of having it subject only to each policy's proportionate share.

The abuses arising from waste of funds, as heretofore instanced and emphasized, is corrected under the flexible premium system by limitation, in the policy contract, of expense charges. Thus the surplus, whether from lapse, surrender, interest earnings, or other sources, is of the general reserve fund, and must be exclusively used for the benefit of policy-holders.

The dangers possible from a reduction of rates to the cost of insurance, as indicated by past experience, are avoided under the flexible premium system by the simple and effective provision, which enables the company to collect an increased premium sufficient to meet the increased cost. In other words, the premium rate is not fixed and unchangeable as with the level premium rates, but they are left *flexible* so as to cover any change that may come into the cost of insurance.

It is utterly impossible to *positively* anticipate either a future death-rate or the future value of investments.

The greatest care may be exercised in making conservative mortality estimates as well as endeavoring to invest only in good and safe securities, yet a "Black Plague" may change the death-rate, or a "Black Friday" knock the bottom out of values.

Safety is the keystone of the arch upon which rests the whole superstructure of life insurance.

Safety is the foundation principle of life insurance, and safety must be assured beyond peradventure.

This is accomplished under FLEXIBLE PREMIUM INSURANCE *beyond any sort of question.*

So long as the death-rate remains the same, and financial conditions do not affect the value of securities, premium rates, based upon experience cost, will remain the same. Should conditions arise whereby the cost of insurance is increased, the policy-holders must justly and rightly contribute their share to the payment of this increased cost, and the company reserves the right to require it of them.

While SAFETY is thus assured, cheapness is secured and waste and insolvency made impossible. Waste is not possible because of the limitation to expense of management; insolvency is not possible because the income can be increased as the exigencies of insurance cost may require.

Hence, it follows that

THE FLEXIBLE PREMIUM SYSTEM

COMBINES ALL OF THE DESIRABLE FEATURES AND BASIC PRINCIPLES TO MAKE

THE PERFECT SYSTEM OF LIFE INSURANCE.

It is especially adapted to the combination of those most desirable features, CHEAPNESS and SAFETY.

I give the following statistics, as of December 31, 1912:

Number of Assessment Associations.....	135
Number of Certificates	484,228
Insurance in force	\$428,344,892
Amount written in 1912	100,639,042
Total income in 1912.....	11,184,473
Total disbursements in 1912	10,017,766
Total admitted assets	10,674,094
Total liabilities	2,711,601

Of the 135 associations, which are given in the Spectator's Year Book none remain of the large ones existing in the decade 1891-1901. The Mutual Reserve Fund (which once expended \$30,000 for a private yacht and entertainment of Insurance Commissioners in convention on the St. Lawrence), Bay State, Massachusetts Benefit, Northwestern Life, Old Wayne Mutual and hundreds of others, which carried millions of insurance in 1891-1901, are gone out of existence.

Many of the 135 have been organized since 1901, and most of these are doing business in the South amongst the negroes of that section. Those in existence December 31, 1912, which commenced business prior to 1902, are largely confined to the members of some order, profession or occupation. A list of them no doubt will be of interest:

Year Organized.	Name of Organization.
1886	Albany Women Teachers' Relief Association, Albany, N. Y.
1889	American Temperance Life Insurance Association, New York City.
1901	American Mutual Benefit Society, Baltimore, Md.
1884	Catholic Knights of Illinois, State Council, Belleville, Ill.
1882	Columbian Protective Association, Binghamton, N. Y.
1880	Commercial Travelers' Life and Accident Ass'n of Cleveland, Cleveland, Ohio.
1881	Commercial Travelers' Mutual Benefit Association, Toronto, Can.
1849	Creieux Benevolent Society, New York City.
1885	DeWitt Clinton Ready Relief Association, Brooklyn, N. Y.
1886	Empire State Degree of Honor, Supreme Lodge, Stockton, N. Y.
1869	Expressmen's Mutual Benefit Association, New York City, N. Y.
1895	Globe Mutual Life Insurance Association, Chicago, Ill.
1878	Gold and Stock Life Insurance Association, New York, N. Y.
1884	Golden Eagle Association, Brooklyn, N. Y.
1884	Home Friendly Society, Baltimore, Md.
1897	Illinois Bankers Life Association, Monmouth, Ill.
1892	Industrial Life and Health Insurance Company, Atlanta, Ga.
1872	Insurance Clerks' Mutual Benefit Association, New York, N. Y.
1884	Jewelers Safety Fund Society, New York City.
1877	Knights Templar and Mas. Mutual Aid Association, Cincinnati, Ohio.
1879	Lutheran Mutual Aid Society, Waverly Iowa.
1872	Masonic Life Association, Buffalo, N. Y.

- 1894 Merchants' Life Association, Burlington, Ia.
 1879 Minnesota Scandinavian Relief Association, Red Wing, Minn.
 1893 Mutual Aid Society of Lutherans, Toledo, Ohio.
 1887 Mutual Benefit Association of Fifth Street Baptist Church, Troy, N. Y.
 1876 Mutual Benefit Association of Suffolk County, Riverhead, N. Y.
 1896 Mutual Life Association of Iowa, Red Oak, Ia.
 1899 National Benefit Association, Washington, D. C.
 1900 National Life Association, Des Moines, Ia.
 1898 Nebraska Mutual Life Insurance Co., Hastings, Neb.
 1868 New York Physicians' Mutual Aid Association, New York City.
 1883 New York Safety Reserve Fund, Syracuse, N. Y.
 1899 North Carolina Mutual and Provident Association, Durham, N. C.
 1875 Northwestern Traveling Men's Association, of Chicago, Chicago, Ill.
 1895 Postal Employes' Mutual Aid Association, New York City, N. Y.
 1886 Protective Life Assurance Society, Buffalo, N. Y.
 1883 Provident Association of Newtown, L. I., Maspeth, L. I., N. Y.
 1874 Railway Mail Mutual Benefit Association, Chicago, Ill.
 1894 Scandinavian Mutual Aid, Minden, Neb.
 1884 Seventh Regiment Vet. & Act. League, New York City, N. Y.
 1882 St. Lawrence Life Association, New York.
 1877 Stafford Benefit Association, Stafford, N. Y.
 1898 Surety Fund Life Company, Minneapolis, Minn.
 1899 Swedish Baptist Mutual Aid Association of America, Chicago, Ill.
 1878 Swedish Methodist Aid Association, Chicago, Ill.
 1885 Swedish Mutual Aid Society "Scandia" in N. Y., New York City.
 1867 Telegraphers' Mutual Benefit Association, New York City, N. Y.
 1882 Toledo Traveling Men's Association, Toledo, Ohio.
 1898 Union Mutual Aid Association, Mobile, Ala.
 1878 Western Commercial Travelers, St. Louis, Mo.
 1884 Western Life Indemnity, Chicago, Ill.
 1886 Western Masons' Mutual Life Association, Los Angeles, Cal.
 1886 Workingmen's Cooperative Association of the U. I. L. of N. Y., New York City
 1878 Young Men's Mutual Life Association, Cincinnati, Ohio.

INDUSTRIAL INSURANCE COMPANIES.

Industrial insurance, although in operation in England since 1854, was first introduced into this country in 1873. In 1880 three companies were issuing this form of indemnity, and the amount in force at the end of the year was somewhat over \$13,000,000. On December 31, 1912, the number of policies in force was nearly 27,000,000, insuring nearly four thousand million dollars. The amount insured under industrial policies now exceeds the total life insurance in force in this country prior to 1880.

Its salient features have been (1) weekly collections of premiums at the homes of the insured; (2) the insurance of the whole family; (3) uniform rates for males and females; (4) limitation of the amount of insurance upon lives under ten years of age to burial fund proportions.

Premiums are five cents per week and upward; insurance \$15 and upward. The average premium is about ten cents per week, and the average insurance about \$125.

The industrial companies have had to overcome anew the prejudice which was formerly directed against the companies insuring for larger amounts. Professional philanthopists have again and again conjured up the spectre of children starved and murdered for the sake of an insurance that would scarcely afford decent burial. Over against the spectre the industrial companies have once and again set the facts, showing

care in the selection of risks and in the payment of claims, and the further fact that the mortality among insured infants is lower than the average infantile mortality. Over against accusations of placing burdens upon poverty the companies have shown that an increase in industrial insurance has gone hand in hand with an increase in savings bank deposits.

As bearing upon the history of Life Insurance, several points must be noted:

1—The industrial companies have immensely broadened the field of Life Insurance. They have not only extended its benefits to a large number of persons insuring for small amounts, but they have included classes heretofore considered uninsurable. They have demonstrated that it is possible to ascertain and cover by an adequate premium the risk of death upon practically every healthy human being who is not living in flagrant violation of moral and hygienic laws. The companies have been obliged to contend with a death rate among adults nearly twice as great as that which has prevailed among the companies doing an ordinary life insurance business, and to ascertain by actual experience the death rate among children; but they have within comparatively few years obtained the facts, and reduced them to a science, upon which they have upreared the stately structure of Industrial Insurance. The number of industrial policies now in force is over three times as great as the number of ordinary policies; and, while the amounts are small, who shall say that the service done each family is not as great in the one case as in the other?

2—Again, the industrial companies have shown that it is worth while to do small things in order to accomplish great things—that the business will bear whatever expense is necessary to do it in the best way. The companies have learned that the industrial classes will not save money and pay for insurance by quarterly or monthly premiums; that they will not take insurance that involves remittances by mail or by periodical payments at an office; but that they will cheerfully pay the cost of it, if it is brought to their homes and sold on weekly installments.

3—If we look closely we shall perceive that industrial insurance—so far as it applies to infants—has introduced a new principle. Every other kind of insurance is indemnity for value lost; infantile insurance is indemnity for expense incurred. The infant life has no pecuniary value; it does not produce—it consumes; but, if it ceases, an expense must be incurred for its burial. The expense of its maintenance, if it lives, can be provided for by the earnings of parents, because this expense—like these earnings—will be so distributed as to require but little outlay each week. So the expense, involving the instant outlay of a week's wages or more, can be met in the same way by industrial insurance. It is not exactly insurance upon life, but, in the language of the charters and of the law, "insurance *pertaining* to life."

CHILD INSURANCE.

In 1907 the National Fraternal Congress instructed the Committee on Statistics to report concerning "Child Insurance," and I prepared for the Committee a statement which required several months of labor and research, involving inquiries of Industrial Companies in the United States and Friendly Societies and Industrial Companies of Great Britain in regard to practical operation. I received several thousand pages of printed and typewritten matter and condensed the information into a typewritten statement of about 80 pages for the Committee.

When no advantage was taken by the Congress of this mass of data, I made an arrangement with Metropolitan Life, of New York, whereby that company would re-insure all child insurance business obtained by Fraternal Beneficiary Societies. I prepared a policy form which was acceptable to the Metropolitan Actuaries and was approved by leaders amongst fraternal society officials—and the plan for reinsurance was likewise approved.

The members and deputies of the Societies were to make or secure the applications and send them to the head office of the Society, under the same regulations for other applications; and the collectors for the Society were to make collections (monthly

instead of weekly) as other collections were made. There were no dealings between members or deputies and the Industrial Company. The latter merely assumed the insurance risk and received periodical remittances from the Society direct.

An agreement was entered into with several Societies to carry out the plan, but the general sentiment of the officials of Fraternal Societies was antagonistic, and, personally, I was severely criticised for proposing "an unholy alliance with the arch enemy of the Fraternal System." The adverse comment caused the officials to withdraw from the agreement, and the plan of reinsurance came to naught.

I had become accustomed long before to criticism, and to having my motives misunderstood and misconstrued and unjustly condemned, and I pursued the even tenor of my way, depending upon time for my justification.

One of the gravest and most serious mistakes which has been made—continuously and persistently made from the very beginning—by the officials of Fraternal Beneficiary Societies has been to assume an eternal and inevitable conflict between the Societies and the Life Companies.

The Societies are not organized for the efficient handling of certain forms of insurance, and it would be much better that they confined their operation to the original idea of protection against dependency of members and their beneficiaries, and thereby retain statutory privileges and exemptions.

Correct and commendable relations between the Societies and the Life Companies would permit of "reinsuring surplus lines" of the former by the latter on the like amicable and satisfactory terms as in practice now existing between Life Companies.

The Fraternal Beneficiary Societies have the organized machinery for securing business at much less expense than can be done by the Ordinary or Industrial Life Companies. They are especially well equipped for securing the business for "Child Insurance" and "Group Insurance," though handicapped in several ways in successfully taking care of such business, even when permitted to do so by State Legislation.

I appreciated the difficulties to be overcome by Fraternal Orders before they could grant Child Insurance, and believed I was doing something for their good when I arranged the reinsurance plan.

The Industrial Companies cannot successfully carry on their business outside of the population centers. To make weekly collections a collector must be able to see several scores of persons in a day, which is impossible except in thickly populated districts.

By means of the lodge system the collectors for Fraternal Beneficiary Societies could attend to the payments by members for insurance on their children, and thus bring this beneficent protection to the homes of hundreds of thousands in the country districts and towns and small cities that cannot be reached by the Industrial Companies. Even in the large cities, the Fraternal Beneficiary Societies have a membership whose homes are not entered by these Companies. There would be very little competition between the Societies and Companies in the conduct of "Child" or "Juvenile" Insurance, and there is no ground other than that of prejudice for objection to cooperation between the Societies and the Companies.

At any rate, between three and four millions of children go uninsured through the failure of the Fraternal Orders to engage in it, or otherwise encourage it. The Industrial Companies have about ten millions of children of the twenty-seven millions insured December 31, 1912.

As to the "Group" Insurance, there is criticism of the Life Companies for undertaking it, and yet the Fraternal Managers, with every facility for promoting it, stand

by and neglect their opportunities. This class of insurance would be fittingly appropriate for reinsurance relations with the Life Companies.

The accumulated encumbrances of years have narrowed the scope of operation for Fraternal Beneficiary Societies, and before the officials can come to an agreement concerning Group Insurance, I fear the Life Companies will have the lion's share.

Returning to the subject of "Juvenile Insurance," I conclude with reproducing the report of the Committee on Statistics and Good of the Orders to the National Fraternal Congress, in session at Put-in-Bay in 1908:

PUT-IN-BAY, Lake Erie, August 19, 1908.

To the Officers and Members of the National Fraternal Congress:

Your Committee on Statistics and Good of the Orders begs leave to submit its report on the matter of Industrial Insurance, in accordance with the terms of the resolution offered by Mr. Gerard at the meeting of the Congress last year, which is as follows:

"Whereas, There is a demand among the membership of Fraternal Beneficial Societies for some form of industrial protection for minor members of their families;

"Therefore, Be it Resolved, That this question be referred to the Committee on Statistics and Good of the Orders, to be hereafter appointed, to investigate the legal requirements necessary to amend the present laws in the various States, and to submit plans and rates necessary to provide for Industrial Insurance, to be confined exclusively to the families of members of Fraternal Beneficial Societies, at next session of this Congress."

It will be observed that the resolution, in substance, asks that we ascertain whether such work might be advantageously undertaken by the various orders here represented, and, if so, whether the laws of the various States would permit us to do so.

Soon after the close of the last meeting of the Congress we addressed a letter to the president of each order here affiliated, requesting his or her views on this subject, and also requesting them to make inquiries as to the probable demand for such benefit among their "field workers" and members. We regret to say that but few of those thus written gave the matter such attention as we desired, hence we are not in a position at this time to indicate what the demand for such benefits would be, although those who did seem to give it attention, reported quite a large proportion of their members as being patrons of the Commercial Industrial Companies, and as in full sympathy with the establishment of such departments in connection with our other work. We then concluded to give the matter a careful examination and learn what we could of the subject generally. To this end we sought the advice of Mr. Abb Landis, who is well known to all, as to the best sources of such information, and were very agreeably surprised and much pleased to learn that he would gladly help us in the matter of gathering the data needed, and when he coupled with this offer a willingness to do this without making a charge for his service, we gladly took advantage of his generosity.

Mr. Landis has furnished us what appears to be a very comprehensive and exhaustive paper or report on "Industrial Insurance," covering about sixty pages of typewritten matter, in which he deals with every element that we should understand pertaining to the history, purpose and plan, as well as the cost and experience of the companies doing that line of work here and abroad. Your Committee would like to have taken the time to present his views on the subject to this Congress, but came to the conclusion that it would be best to submit with our report this report of Mr. Landis, which the Congress may have printed if it wishes to do so. Regardless of the action of the Congress in this relation, your Committee wishes to give Mr. Landis due credit for his advice and for the generous contribution he made to our fund of information, upon which we shall make frequent and liberal drafts in what we shall have to offer.

The business of industrial insurance, as we know it now, is not an American product; it is an imported article coming here from England. It was first introduced in its present form by the Friendly Societies of Great Britain. Its main purpose is to secure a decent funeral and burial for the person insured, and is largely used by parents

for the benefit of their minor children, although all the commercial companies insure adults as well.

The Prudential Company of Newark, N. J., was the first to establish this business in America. It was authorized in 1873 by special act of the New Jersey legislature as "The Widows' and Orphans' Friendly Society." In 1875 its name was changed to the "Prudential Friendly Society," and later to the "Prudential Insurance Company of America." The capital was originally \$25,000; its capital is now and has been since 1893, \$2,000,000. Of this amount only \$91,000 was paid in in cash; the balance represents profits capitalized. The company has been a liberal dividend payer all these years. In short, the business has been very profitable and this company is a fair example of all the other established companies doing this line of business. The Metropolitan is the largest of such companies, and that you may have a fair idea of the volume of such business in this country, it may be said that it had over 9,620,000 policies in force at the close of 1907. Its income that year was more than \$73,000,000. The new industrial business written by it and paid for was over \$254,000,000 and the number of claims paid were 137,270. Its net gain in policies for the year was over 600,000. In other words, this line of insurance work has become very popular in recent years, and through the thorough organization of the large companies it has become very profitable. And yet it cannot be said there was any demand for such a business. It took the Metropolitan company over five years to reach the point where the business took care of itself. It was necessary for that company to import from Great Britain a force of two thousand experienced industrial insurance workers to establish their business in all its departments. *The demand had to be created*, just as is the case today in any department of insurance work, excepting, in a limited way, only fire insurance. The business is now well established, but it is all, practically, in the hands of the commercial companies. It has been diverted from the Friendly Societies to the companies for profit. Everybody knows that it is grossly expensive as compared with even ordinary life insurance—made so by the system and plan of operation. The cost of securing the business in the first place is necessarily great in proportion to the premiums paid by the insured, since the great bulk of the premiums are not more than ten cents per week, and in most cases of infants or children under ten years of age, only five cents. The collections are made weekly at the home of the insured, by paid collectors, who are also solicitors, and the work of taking care of the business at the home office is correspondingly greater than the ordinary life insurance business. President Hegeman of the Metropolitan Company says that the work of securing and caring for this business, as compared with ordinary life insurance, is as eighteen to one, while the expense is as two and one-fourth to one.

In the matter of expense, the Prudential is about the same as the others. For 1907 their experience was as follows:

Ordinary Life Department	18.05 per cent.
Industrial Department	37.27 per cent.

One of the remarkable facts connected with the development of this work is the relation between population and industrial policies in force, as will appear from the following table compiled by Mr. Landis:

Ages.	Percentage of Population.	Percentage of Policies in Force, 1904.
1 to 4 inclusive	9.57	9.57
1 to 9 inclusive	21.28	22.47
1 to 14 inclusive	31.94	34.66
1 to 19 inclusive	41.91	45.35
5 to 17 inclusive	28.42	31.65
20 to 29 inclusive	18.29	17.68
30 to 39 inclusive	13.88	12.83
40 to 49 inclusive	10.16	9.96
50 to 59 inclusive	8.80	8.06
60 to 69 inclusive	4.08	4.86
1 to 69 inclusive	95.12	98.74

When the person to be insured is less than ten years of age next birthday, the amount of benefit payable depends upon the length of time the policy has been in force. Thus, if a child is five years of age next birthday when the policy is issued and the policy remains in force three years, the insurance for a weekly premium of five cents will be \$95. After the policy has been in force four years the insurance will be \$130, and after it has been in force five years it will provide for a payment of \$160 at death.

By this time, however, the child will be ten years of age next birthday, and therefore the amount of insurance will remain at \$160.

In no case will any policy be written for a greater amount of insurance than set forth in the following table, nor will any policy be written which together with any other insurance then in force, in this or any other company, would make the total amount of insurance in force exceed the amounts stated in this table.

Age next Birthday.	Limit of Insurance.	Age next Birthday.	Limit of Insurance.	Age next Birthday.	Limit of Insurance.	Age next Birthday.	Limit of Insurance.
2	\$30.00	7	\$140.00	12	\$380.00	17	\$612.00
3	34.00	8	168.00	13	460.00	18	700.00
4	40.00	9	200.00	14	520.00	19	784.00
5	48.00	10	240.00	15	520.00	20	855.00
6	58.00	11	300.00	16	520.00	21	930.00

It is understood that the average amount of protection in force in the Industrial companies in 1904 was \$32.56 on all ages under ten. Under age 15 it was \$48.90. At age 2 the average was \$13.33, at age 3 it was \$19.10, at age 4 it was \$23.46, and at age 5 it was \$27.70.

From this it appears that the rate of premium is very high, during these years, \$2.60 for an average of only \$32.56 under ten years and \$48.90 under fifteen years.

In this connection it may be said that the Insurance Department of the State of New York has made a thorough investigation of the mortality experience of the Metropolitan Company, from which it has a mortality table that is now recognized as a standard for such business, and were these organizations to undertake the work this table could be made the standard so that there would be no groping in the dark as to what experience might reasonably be expected. Mr. Landis has prepared for us and we append herewith a table showing the amount of protection that \$1.00 per year will buy contributed monthly on term to age 21, Standard Industrial Mortality Table and four per cent interest.

Age next Birthday.	Col. 1	Col. 2.	Col. 3.
2	\$109.86	\$93.38	\$87.89
3	144.60	122.91	115.68
4	179.32	152.42	143.46
5	203.81	173.24	163.05
6	222.46	189.09	177.97
7	235.70	200.35	188.56
8	245.25	208.46	196.20
9	250.12	212.60	200.10
10	250.06	212.55	200.05
11	245.26	208.47	196.21
12	236.64	201.14	189.31
13	225.38	191.57	180.30
14	212.81	180.89	170.25
15	199.72	169.76	159.78
16	187.04	158.98	149.63
	<u>\$3,148.05</u>	<u>\$2,675.81</u>	<u>\$2,518.44</u>

Col. 1. Amount of protection that \$1.00 per year will buy contributed monthly on term Age 21, with no deduction for expenses.

Col. 2. Amount of protection that \$1.00 per year will buy contributed monthly with 15 per cent used for expenses (85c per year net).

Col. 3. Amount of protection that \$1.00 per year will buy contributed monthly with 20 per cent used for expenses (80c per year net).

It will be seen from what has been said about cost that with a 20 per cent loading for expenses, from 2 1-2 to 5 times as much protection could be furnished for \$1.00 as is now obtainable. And why? Let us answer, largely because we could minimize the cost of securing and retaining the business. How could we do this? Because we have the machinery now organized, and by limiting the benefits to small amounts as above indicated is done by the commercial companies in this country, and this is equally true of the foreign companies, the annual premium would be so small that it could and should be paid in one sum, thus at once practically doing away with two of the principal causes of the great expense incident to the business—collecting and office work. Then again, this great reduction in annual cost would be a great inducement to our members who want such protection to secure it in the society where they hold their membership, and should materially reduce the cost of securing the business. In short, the only reason for establishing such departments would be the advantage that would accrue to our members and to our Orders. It would increase the interest of the member in the Order, because of the financial saving and the convenience of handling it. It would in a way interest the children in the Order, and as they reached the age when they could become members they would be going in the right direction.

From the foregoing our Committee concludes that this work can be advantageously and economically done by these associations.

That the benefits should be limited to small sums—not over \$40—on the life of any child between one year and five years of age, and not to exceed \$150 in any case.

That the mortality table adopted by the State of New York, above referred to, should be made the standard.

That it would be advisable to require the premiums or rates to be paid annually.

That no one but members of these Orders should be allowed to take advantage of this provision, and that in no case should any one but the parent of the child be allowed to secure such benefits, or the guardian of the child when death of the parent occurs after the issuance of the certificate in such cases.

That in all cases the protection thus secured should end on the child becoming twenty-one years of age, and that the protection thus afforded be called "INFANTILE PROTECTION."

Before this work can be undertaken by these Orders two things are necessary:

First. Legislation must be secured in the different States authorizing it, and to that end provision should be made in the new Uniform Bill, now under consideration.

Second. Those Orders that want to establish such branches or departments must amend their laws accordingly.

Fraternally submitted,

D. P. MARKEY, Chairman.

W. E. ROBINSON,

F. FAIRMAN,

JOHN T. YATES,

Committee.

Mr. Markey also reads section the Committee would suggest be made a part of the Uniform Bill, as follows:

"Section—Any association authorized to do business under this Act may issue certificates upon the lives of the children of its members who are not less than one year or more than eighteen years of age. The amount of protection to be thus furnished shall in no case exceed the sum of forty dollars on the life of any child between the ages of one year and five years, and \$100 on the life of any child between the ages of five years and ten years, and \$150 on the life of any child between the ages of ten years and eighteen years. All such certificates shall be issued for a term of years ending with the attainment of the age of twenty-one by the child upon whose life the certificate is issued. No benefit thus provided shall be payable to any other person than the parent of the child, except in cases where subsequent to the issuance

of the certificate the parent of the child in whose favor the certificate is issued shall have died, in which event the certificate may be payable to the guardian of the child.

"All contributions necessary to provide such protection shall be based upon the standard industrial mortality table adopted by the State of New York, and interest at the rate of 3 1-2 per cent per annum."

Mr. Markey: Mr. Landis wishes me to make this statement, which is probably just in this connection: The actuaries of the Prudential, Metropolitan and John Hancock supplied Mr. Landis with many details and much information, they being informed that the same would be presented to the National Fraternal Congress, in which circumstances your committee desire to acknowledge obligation and express appreciation to the officers of these life companies.

Mr. Markey: I move that the report of the committee be accepted and placed on file.

Motion seconded and carried.

A GENERAL REVIEW.

Much space has been given to quoting others, and it now may be pertinent to include some personal observations in the way of a general review.

Organization for mutual assistance is of great antiquity and wide distribution. Societies of this kind have not always been as sharply differentiated as they are to-day. In common with other institutions they have emerged from a comparatively indefinite similarity to a comparatively definite heterogeneity, and have doubtless yet to undergo further development.

The first systematic effort at mutual cooperation along altruistic lines was in the formation of the great trade guilds of the Middle Ages. As the guilds degenerated and gradually outlived their usefulness, the need of substitute organizations became apparent. To the recognition of this need we may trace the rise of the Friendly Societies of Great Britain. Of these, it will suffice to consider a typical specimen, for which purpose I have selected the largest and strongest, the Manchester Unity, I. O. O. F.

This great body, with a present membership of over a million, is composed of and governed by the laboring classes. Local lodges exist in all parts of the country and manage their own affairs in a thoroughly democratic manner. They are as independent as the New England town, being, like the latter, subordinate to a central body of strictly limited authority, to which they send representatives. In the local lodge itself one member is as good as another and discussion is perfectly free. The officers of the central governing body are elected annually, with the exception of the Secretary, whose tenure is permanent.

The founders of the Unity failed to appreciate the nature or magnitude of the financial problems involved in their undertaking. Although the plan of the society contemplated the payment of definite sickness and funeral benefits, no attempt was made to calculate adequate rates of contribution. Aside from the fact that such a calculation would have been impracticable for lack of a sufficient volume of reliable data, its importance was not recognized.

There existed in Great Britain the same feeling that we find so prevalent in our own country—namely, that "Fraternity" could be depended upon to overcome all the evil results of vicious business habits. That Fraternity is capable of accomplishing much can be doubted by no careful observer; but the tendency to regard it as a panacea is sure, soon or late, to lead to disaster. This the Unity learned in time by the teachings of bitter experience.

Organized in the year 1812, the Unity grew and flourished for several years, be-

cause its rates sufficed while the members were all young and mostly in good health. In fact, many of the lodges became burdened with accumulated funds, of which they proceeded to relieve themselves by exploiting the social virtues. They little realized that these very accumulations formed their only safeguard for the future when, on account of the increasing age and infirmity of their members, the claims should become too heavy to be easily satisfied from the proceeds of current collections.

After some thirty years of this loose, improvident operation, it became abundantly manifest to some of the more thoughtful members that the Unity had traveled far on the broad and pleasant road that leads to destruction. Then began an agitation which threatened the very existence of the society through the secession of individuals and entire lodges, but which resulted in a thorough investigation of its past experience and the formulation of adequate rate tables for future use. With the adoption of these tables in 1854, the Unity opened a new chapter in its history which thenceforth has been an uninterrupted record of growth and prosperity. One more reform needed to be, and was, instituted in the decade ending in 1870, by which year quinquennial valuations had become compulsory.

The record of the Unity demonstrates that it is quite within the capacity of the laboring classes to conduct a great business on democratic principles. It is an object lesson which justifies a most optimistic attitude toward future industrial conditions. As such, it has attracted the favorable attention of the actuaries, economists, and legislators of Great Britain, all of whom seem to have recognized the fact that they were confronted with a phenomenon of most hopeful import. It is regrettable that a similar movement in this country has received far less sympathetic treatment from experts and officials. Some reasons for this difference of attitude will be given later.

In the United States, prior to 1868, there were no organizations closely resembling the British Friendly Societies. It is true that secret societies, such as the Freemasons and Odd Fellows, and trade unions were accustomed to assist distressed members, but such work was more or less incidental and not the main object of their existence. Furthermore, the help so extended partook of the nature of charity; that is, it was dictated by sympathy or fraternity instead of by contract.

In 1868, however, John J. Upchurch, a Pennsylvania workingman, founded the Ancient Order of United Workmen, in the plan of which mutual insurance was dominant, although the features characteristic of secret societies in general were by no means ignored. In various centers in the State were organized local, self-governing lodges which were entitled to send delegates to the grand lodge at Meadville, the central legislative body, the elected officers of which managed the financial affairs of the society and compelled obedience to the by-laws on the part of the local bodies. In fact, the grand lodge, although a representative assembly, was the real source of authority, the self-government of the local lodge being based on sufferance rather than on right.

As the society spread into adjacent States and additional grand lodges resulted, the supreme lodge was organized at Meadville in 1871, for the purpose of harmonizing the work. Its function is advisory, rather than authoritative, the grand lodges having declined to surrender their independence and having reserved the right to repudiate their allegiance to the supreme body.

The rapid growth of the Workmen, indicating that it met a popular want, of course inspired imitation, and to-day there are in the entire country upwards of three

hundred fraternal beneficiary societies. They all have representative government, the lodge system and ritualistic ceremonies; in fact, these features are required by the statutes of most of the States.

In respect of benefits offered and rates charged, they exhibit all the picturesque variety of which the untrammelled human fancy is capable.

That there need be any particular relation between the respective values of the benefits promised and of the contributions charged never seemed to occur to the founders of these societies.

In fact, all suggestions of that nature were brushed aside as smacking of theory and, therefore, unworthy of consideration by practical men who had competition to meet and could guess just as clearly as their rivals.

In the seventies, a great impetus was given to the formation of fraternal beneficiary societies by the failures of old-line life companies and the startling disclosures as to the methods followed by some of the most prominent among them.

To the disgruntled victims of old-line methods, the siren voice of the fraternal beneficiary society was sweet indeed.

Within the sacred precincts of the lodge room they could denounce to a sympathetic audience the "outrageous treatment" to which they had been subjected by a "soulless corporation" and could resolve to demonstrate to the world the possibility of combining the business of mutual insurance with the practical exemplification of the golden rule.

The idea was a noble one, albeit somewhat too elevated for present-day human nature and insufficiently enlightened by a knowledge of the cost of insurance.

To fraternalists the mathematical reserve on life policies has always been a more or less unholy mystery.

Having, in the old tontine days, seen this accumulation confiscated in the case of lapsing members, it was a natural inference that a similar course was followed in respect of the dead.

Obviously these millions of reserve bore a sinister aspect and represented an unnecessary burden on the helpless policy-holder.

Thus originated the popular battle cry of "Keep your reserve in your pocket."

For many years the societies remained true to their principles and sedulously avoided accumulation, and only with the utmost reluctance did they begin to abandon the practice under the irresistible pressure of experience.

In the oldest societies, such as the Workmen, business principles were at first completely subordinated to the demands of fraternity.

No discrimination was allowed because of age, occupation, residence, or physical condition—all members were on a perfect equality.

That such methods did not wreck the society before it was fairly launched is conclusive proof that the fraternal tie is more than an empty sentiment.

Slowly, but none the less surely, the faulty system of the Workmen has been mended until now the supreme lodge urges with all the force at its command the adoption of a plan prepared under the guidance of a competent actuary.

In other words, here, as in Great Britain, the common people have demonstrated their capacity to manage large enterprises on democratic lines.

To one who has the welfare of humanity at heart, few signs could be more encouraging.

Comparatively few societies have imitated the Workmen's original example of a uniform rate of assessment at all ages.

We find the vast majority adopting the system of rates graded to admission ages and remaining level thereafter. Within a few years, a society so operated would find itself composed of groups, corresponding to entrance ages, each containing members of various ages paying the same rate.

In short, a compound Workmen plan had been substituted for the original simple device, with little or no practical advantage.

Of one society, the National Union, special mention should be made, because of the fact that it started on the step-rate principle, the rates being graded by ages and each member being required to pay the rate corresponding to his attained age on January first of each year. This plan was defective because of the fact that the rate schedule stopped abruptly at age 65, no adequate provision having been made for members who should pass that point. It is particularly gratifying to be able to say that this weakness has now been overcome through the efforts and upon the initiative of the officials of that Society.

In course of time, the older societies began to experience difficulties.

In spite of their most strenuous efforts, they found themselves compelled to levy assessments more and more frequently, with the result that they were unable to compete on equal terms with their younger rivals.

The latter, having learned something from the experience of their predecessors, endeavored to prevent their own future decay by every fantastic device that the will of man could conceive.

Some of these were actually patented, which fact would indicate that their inventors at least believed them to be effective.

A study of these various schemes to secure the advantages of a mathematical reserve, without accumulating it, will convince any unprejudiced mind that the ingenuity of ignorance is still in active operation.

Fortunately, the older societies do not find these vagaries attractive, but manifest a tendency to readjust along scientific lines, with the assistance of expert advice.

An important distinction between the British friendly and the American fraternal beneficiary societies should not be forgotten.

The main purpose of the former was and is the payment of sickness and funeral benefits, and, although some of them offer ordinary life insurance, the maximum risk assumed on any one life is 200 pounds. The American societies are essentially mutual life insurance organizations, although some of them pay limited sickness and accident benefits. The most popular certificates have a face value of \$1,000 or \$2,000, but not infrequently they are written for \$5,000.

The foregoing distinction may help to explain why in the one country the attitude of the actuaries is tolerant or sympathetic, while in the other it is hostile. Practically all of these gentlemen are, or have been, connected with old-line companies, and have thus become somewhat biased, perhaps unconsciously.

The British societies occupy a field of their own, their competition with the business corporations being hardly perceptible.

The American societies, on the other hand, are active and most successful competitors of life companies.

Furthermore, the founders of the fraternal societies provoked the experts by sneering at them and ignoring their sometimes disinterested advice.

At first glance the situation would seem to be unfortunate, but the indications are that it may result in the development of a new generation of actuaries, unfettered by traditions.

The fraternal beneficiary system is now in its forty-sixth year, and its amazing vigor is a source of perennial grief and astonishment to its old-line critics who regarded it at first with the kind of intolerant contempt that Alexieff used to display toward the Japanese.

It seems impossible for men to learn that there are more things in heaven and earth than are dreamed of in their philosophy.

The Ancient Order of United Workmen which, by all the rules of orthodoxy, ought to have perished years ago, has been subjected to the fire-test and still lives.

It is evident that we are here confronted with a phenomenon that defies mathematical analysis. The plans of the fraternal beneficiary societies may be simultaneously abhorrent to mathematics and acceptable to human nature.

The policy-holders of an old-line company, even though it be the mutual variety, are practically impotent to affect its management, being without organization or knowledge of one another's ideas. As few of them can attend the annual meetings, they usually designate as proxies men of whom they never before heard, and of whose opinions they are blissfully ignorant. They feel and are as helpless as the depositors in a bank who place their trust in the honesty and sagacity of the officers and hope for the best. This is business, pure and simple, and to it business principles apply in all strictness.

The members of a fraternal beneficiary society are organized in numerous local lodges, which hold meetings at least once a month and sometimes every week. Here the members become acquainted and here they discuss every detail of their co-operative enterprises. As the time approaches for the regular annual or periodical meeting of the supreme body, they elect thereto trusted representatives, whom they may instruct if they so desire. There develops in these members a very active feeling of proprietorship in their society and of loyalty to its interests. It is, so to speak, their child, and they will endure no inconsiderable sacrifices to conserve its existence. To such a condition, business rules and principles are inadequate, as they ignore the most vital feature of the phenomenon.

That the foregoing is the true explanation of the failure of facts to verify actuarial predictions is indicated by another striking circumstance.

About the time that the fraternal beneficiary movement originated there were organized on the same faulty plans, but with government similar to that of the old-line companies, a number of assessment associations. Although their officers were, as a rule, more keenly sensitive than those of the fraternals to approaching dangers, yet, with a single exception, due to peculiar conditions, every one of the original and prominent associations has disappeared or has been transformed into a legal reserve or stipulated premium company. As Carlyle would have said, "This is significant of much."

As a direct result of the lodge system, the societies minimize the expense of field work. A comparison of the respective costs of management of the business companies and the fraternal is highly enlightening.

If it be argued that lodge dues have been ignored in the comparison, the answer is that their main object is to pay for fraternal features for which there is no counterpart in an old-line company. Nor are these features imaginary. We find them sufficiently powerful to hold together vast societies like the Masons and Odd Fellows, which do not pretend to conduct an insurance business. Millions have been paid by the local lodges for the relief of members who were sick, injured, or out of employment. Other millions have been expended in social entertainment, which is a feature not to be overlooked when estimating what has been accomplished by these

bodies. I have noted, in many publications, slurs cast at this latter kind of expenditure. Those who belittle the social feature evince ignorance of one of the strongest points in favor of mutual insurance under the lodge system.

Life insurance, *per se*, is taken and carried for the protection of dependants. No benefit is realized until the death of the insured, and, consequently, he who carries and pays for the insurance has no other satisfaction from it than that derived from the consciousness that he has provided for loved ones in the event of his death. Of itself, such a performance indicates a high and noble purpose.

Man owes a duty to himself, and when this can be combined with that owed to his family, much has been accomplished toward the consummation of a perfect system of social organization. The lodge meetings not only provide the ordinary pleasures of social intercourse, but under the influence of the teachings of the ritual, they are an inspiration to higher ideals, and beget the altruism that turns the mind outward and makes men wish to live for others beside their own immediate families.

This social feature of the fraternities has saved thousands from drunkenness and other forms of dissipation into which they otherwise would have plunged in their blind quest of pleasure.

Many of these societies accept members of both sexes, and most of them absolutely bar alcoholic liquors from their lodge rooms.

The combination of life insurance operation along with fraternal and social relations is one that appeals to reason and sentiment and tends to popularize co-operative effort for mutual protection.

The life companies have recognized this fact and have undertaken to minimize its effect by representing that they sold policies under which the insured did not "have to die to win."

An important difference between the old-line and fraternal systems is in respect of elasticity.

The life company is rigid, the contract being definite as to both benefits and contributions. For the sake of safety, the company is, consequently, obliged to overcharge.

In the fraternal the amount that a member will be required to pay from year to year is seldom entirely definite.

His assessment rate may be established in the by-laws, but almost invariably these are subject to amendment by the supreme legislative body.

Furthermore, it is not unusual to find a provision whereby no claim can exceed the proceeds of one assessment on the entire membership.

As the provision for expense of management is generally quite definite, there results not only the ability to collect each year the exact cost of protection, but a most effectual discouragement of extravagance.

The members have never shown a disposition to endorse the doctrine that the services of some men are worth from fifty to a hundred times as much as those of the average citizen, and, as a consequence, salaries above \$5,000 are rare. Strange as it may seem to those conversant with old-line conditions, capable officers are secured without difficulty, in spite of the uncertain tenure of their position. The wisest selections may not always be made, but, on the other hand, the unfit do not survive.

Democratic government naturally involves politics, and from the latter it must be confessed that the fraternal are not exempt. That this circumstance is to their detriment is by no means certain. Political aspirations are distinctly honorable when not tainted with graft. From suspicion of graft, the administration of the societies

has been singularly free. Although large sums of money have been handled, the losses that have occurred have been due almost exclusively to faulty judgment. Even such losses have been inconsiderable. In fact, in respect of both honesty and economy of management, the fraternal can well stand the test of comparison with old-line companies.

Although enough has been said to indicate that the fraternal beneficiary system is in harmony with existing conditions in the United States, it will be useful to investigate its prospect of permanence.

In the first place, let it be premised that the failure of individual societies proves nothing against the principle upon which they were founded if other adequate causes are known to exist. The whole movement is still in the experimental stage, for which reason alone uninterrupted success would be little short of miraculous.

Representative government has not in every instance proved equal to the tasks imposed upon it, but it has shown an ability to profit by experience.

With few exceptions, the recent history of the societies under consideration has been most encouraging. There is every indication that the great majority of them will, through their own efforts and without compulsion, so reform their faulty plans as to assure their financial stability.

They enjoy the advantages of representative government and have demonstrated their ability to modify their plans when the latter have proven unsatisfactory.

They are attempting to provide cheap protection for their families and they are accomplishing their design, not perfectly it is true, but with really amazing success.

A single one of these societies has since its organization paid in death claims not less than \$225,000,000. This enormous sum of money has gone to the widows and orphans of men who would have carried far less insurance or none at all had it not been for the existence of the fraternal.

Popular government has been sufficiently tested to justify my belief that the fraternal orders will not fail, in the long run, if let alone.

They can be killed, doubtless, and against this danger the only safeguard is eternal vigilance.

Their success, as I have already intimated, means much to the cause of humanity.

No thoughtful observer can regard our present industrial régime as final. With its remittent warfare between capital and labor, it is obviously a temporary condition. By what is it to be succeeded?

Shall it be the deadly stagnation of socialism, or shall opportunity be left for the development of individualism which has played so prominent a part in the history of the human race?

Perhaps, if the great business of life insurance can be successfully conducted on democratic principles, the outlines of the answer may become discernible.

Possibly capitalists, as a distinct class, may become as unnecessary as an hereditary aristocracy.

One may be permitted to indulge the dream that some day capitalist and laborer may be combined in the same person, and that great industries may be competently managed by officers elected by the whole body of the workers. There is nothing incredible in the supposition, which is, on the contrary, in line with the course of human evolution. Such a condition would allow free play to individual ambition and tend to abolish strikes and the existing abnormal contrasts of wealth and social position.

Since reforms are inaugurated by movement of the masses, and since five millions of the wage-earners and breadwinners in the United States and ten millions in

Great Britain are taking lessons in economical science from the best of all teachers, *Experience*, is it beyond reason to anticipate development of the mutual and co-operative principle underlying fraternal society management in the business relations between producers and consumers, the great majority of whom are the wage-earners and breadwinners of the country?

To be more definite, let me call attention to the fact that the *insurers* and the *insured* are the same persons in a fraternal beneficiary society.

The officials and managers are strictly and truly the agents of the members from whom the contributions are collected and to the beneficiaries for whom they are distributed.

No capitalist stands between the contributing members and the dependants of deceased members.

Only a central office, with competent agents in charge, is needed for the collection of millions from the many, and the distribution of the same in the payment of promised benefits.

Why is it not possible to extend this principle of mutual cooperation, and entirely eliminate the capitalist and forever be rid of his exploitation of labor with its attendants of friction and ferment?

Will not the masses, some day, learn the general application of this principle?

The fraternal beneficiary system has a profound significance; it is symptomatic of the times, and what it needs is intelligent direction with a minimum of State interference.

Any institution that has distributed to widows and orphans, within four decades, the enormous sum of more than seventeen hundred millions of dollars, \$100,000,000 of which was paid out in 1913, is certainly entitled to serious consideration by those who make a study of political and social science.

Two hundred of the existing societies have promised to pay death benefits amounting to more than nine thousand millions of dollars. The ability to fulfill their promises means much in more than four million of American homes. Penury, misery, and crime will result from inability to carry out their contracts of insurance.

READJUSTMENTS.

Readjustments have been necessary under all systems of life insurance.

There could have been no development nor improvement without readjustments.

In the early forms of life insurance there were no definite promises in the way of benefits or contributions.

It has been a wonderful evolution from the "box," nailed to the wall of a public house from which charity pittances were dispensed, to the treasuries containing billions for the protection of widows and orphans and the relief of the disabled and the aged.

"Dreams in their development have breath, and tears, and tortures, and the touch of joy;" and not dissimilar has life insurance, in its growth and progress, its reverses, its trials, its failures and its final success.

Many pages have been given to the history of life insurance organizations and their fanciful undertakings and their material accomplishments. The attainment of the goal of perfection is yet to be recorded.

In the making for the ultimate end, original plans many times have been changed by the organizations which have survived the ordeal of conversion.

In so far as financial solvency is concerned the life companies have gone ahead of the fraternal beneficiary societies; under the whip, however, of State compulsion.

Statutory standards were set and the life companies were compelled to measure up to them or go into the hands of receivers.

Mortality demands forced changes in the plans and rates of fraternal beneficiary societies. No legislative enactment prescribed the test of adequacy nor fixed any standards as guides to financial solvency. In these circumstances there has been resort to every conceivable expedient to avoid the adoption of the simple, direct method of requiring contributions to provide for the promised benefits.

Legislation and regulation placed life companies in a sound financial position, or put them out of business. The results of legislation and regulation applied to fraternal beneficiary societies will not be different.

Situations in Great Britain and in America have been identical in respect of fraternal societies and their adoption of makeshifts rather than substantial reforms in their efforts to thwart the operation of natural law.

In both countries inadequate contributions for the benefits promised have been characteristic of fraternal and friendly societies, and the universal practice has been to favor the older at the expense of the younger members.

When the discrimination is disclosed to the younger members, and when it is proposed to require the older members to contribute in proportion to their equitable share in the losses, the former join the latter in denouncing such a proposition as "unfraternal" and no more nor less than a scheme to freeze out the old man.

Because it has been impossible to overcome this sentiment, I have been a party many times to the apportionment of accumulated funds to the use of those who had contributed nothing towards the accumulation. I have always stated the fact of appropriating what belonged to one for the advantage of another, but that other being an aged brother justified the act to those making the sacrifices.

It seems never to occur to those who insist upon such apportionments, that all who are old are not indigent and in need of being assisted in the payment for their insurance protection; that the young have most dependants and many times are sorely pressed to make their monthly contributions.

These things I have urged to no avail, and to accomplish results I have apportioned funds as stated. I have never had a law suit over such an apportionment, whereas when rules of equity entered into the division of funds, in every instance, save one, a petition has been filed praying for an injunction against it.

The first notable change from original to new plans was that of the Ancient Order of United Workmen in 1895, when the "Classified Plan" was adopted and the "Equal Levy Plan" abandoned—in so far as these things could be accomplished by the Supreme Lodge. As a matter of fact, only such Grand Lodges as were in financial straits adopted the "classified" or so-called "step-rate" plan. The others for some time continued to levy \$1.00 assessments on all members, regardless of age, whenever assessments were needed.

The "Classified Plan" placed the membership in age-groups. Those who were 18-24 paid at the rate for that group to age 25, then they paid an increased rate for five years until they attained 30 years of age. The advance continued to 55 years of age, when the rate per \$1,000 at each assessment was \$1.92 for the remainder of life. All members 55 years of age and older at the time of readjustment were given the level, whole life rate of \$1.92 each assessment per \$1,000.

When I ventured the opinion that the "Classified Plan" was unscientific, unstable, and inadequate, in that it would fail to provide for the protection at ages older than 55, I was severely denounced by A. O. U. W. officials as an enemy to the fraternal system and altogether an undesirable person in the camp of fraternal beneficiary societies.

In 1903 the Supreme Lodge of the Ancient Order of United Workmen officially recognized the inadequacy of the "Classified Plan" and adopted for itself and required Grand Lodges to adopt adequate, level and uniform rates graded to ages of entry, and applied at attained ages of existing members younger than a designated age. This limitation in their application created deficiencies too great for the contributions and funds. In consequence subsequent readjustments were necessary.

With few exceptions every readjustment of contribution rates by fraternal beneficiary societies has favored the older members by rerating as of ages of entry, or by applying the rates as of attained ages younger than 49, 55, 60, 65, or 70 years of age.

Seldom have the funds in hand at the date of readjustment been equal to the present value of the deficiencies created by granting to members contribution rates lower than required at their attained ages.

However, in many instances, careful calculations have been made in the effort to limit the deficiencies to such an amount in present worth that it would not exceed the estimated present value of future gains and savings.

Some of these estimates are being realized in practical operation.

Others have not been realized, largely due to heavy withdrawals, adverse mortality experience and failure to introduce new members in numbers sufficient to neutralize the bad effects resulting from the change.

It appears to have made little difference in resulting dissatisfaction and disruption whether or not large, or small, or no concessions were made to the older members.

The mere fact of change in contribution rates created disturbances, withdrawals and adverse selection.

In the readjustment of the Knights of the Maccabees of the World in 1904 and that of the Royal Arcanum in 1906, there were no increases of rates at ages younger than 55 and 65 respectively, so that the readjustments only immediately affected members older than those ages, yet the Maccabees lost upwards of 40,000 and the Royal Arcanum a somewhat larger number of members at the younger ages.

The older members received great favor and in return complained and criticised and protested and indulged in bitter denunciation and instigated litigation and hesitated at nothing that would embarrass the management and—remained in the Societies.

The younger members, alarmed or disgusted, quit.

The action of the older members has been to their own disadvantage. By encouraging the young to withdraw, or in assuming an unfriendly attitude to incite them to withdraw, the older members lose the obvious advantages from association and cooperation with the young.

Had they been appreciative of the shifting of much of their burdens to other shoulders, and had they loyally helped to retain the young and assisted in securing new members, the deficiencies created by granting to them favors could have been overcome by the estimated gains and savings incident to cohesive mutual cooperation and an increasing membership.

Wherever—and there are a number of such cases—the members have acquiesced in a rerating and have supported the management in its effort to increase the busi-

ness, no readjustment has failed because of deficiencies due to favors to old members where such deficiencies were within the estimates of the consulting actuaries.

Many makeshift readjustments have been made on the initiative of members or their representatives contrary to the advice of actuaries and, though accepted by members, have proved a failure.

It will be noted that I have referred only to changes in contributions under the mention of readjustments.

However, one amongst the first readjustments (in 1898) was that of the American Legion of Honor, where the main feature consisted in reducing \$5,000 certificates to \$2,000. This was successfully resisted in the courts, and only with the consent of members, or in optional form, has it since been attempted to reduce benefits.

In Great Britain the reduction in benefits has more often been adopted, under the advice of actuaries, than to increase the contribution rates. The Actuaries for the Manchester Unity make the following interesting comments on the different methods of readjustment and their effect :

It may be assumed that the deficiency is due to original unsoundness of principles, and that it has been accumulating for many years. Actuarially a reduction of benefits would be advised in such a case, but having regard to the preference for increase of contributions which is frequently disclosed, it is proposed to show the effect of all the measures that may be regarded as either practically or theoretically possible. Assuming that the whole of the deficiency is to be removed these measures may be stated as follows :—

- (a) Reduction of the sick benefits to 10/- per week for 26 weeks ; 5/- per week afterwards.
- (b) Reduction of the sick benefits to 12/- per week for 26 weeks ; 6/- per week for 26 weeks ; 3/8 per week afterwards.
- (c) Division of the deficiency amongst the members *pro rata* to length of membership, and conversion of the amount debited to each member into its equivalent annual contribution.
- (d) Division of the deficiency amongst the members in equal sums and conversion of the amount debited to each member into its equivalent annual contribution.
- (e) Increase of the contributions by an equal sum per member without regard to duration of membership or age.

Each of these measures will have a definite and ascertainable effect in money value upon the contract into which the society has entered with each member. In order to contrast these values it is convenient to set them out at each age in parallel columns ; this is done in the following statement :—

AGE.	CASH VALUE OF DEFICIENCY DEBITED TO EACH MEMBER BY									
	Method.		Method.		Method.		Method.		Method.	
	(a)		(b)		(c)		(d)		(e)	
	£	s.	£	s.	£	s.	£	s.	£	s.
20	3	17	2	14	Nil		5	1	6	10
30	4	9	3	14	3	2	5	1	5	16
40	5	5	5	2	6	3	5	1	4	18
50	6	4	7	0	9	4	5	1	3	19
60	7	6	9	14	12	6	5	1	2	16
70	8	4	13	0	15	8	5	1	1	16

Before considering these figures it will be convenient to show the equivalent annual

contributions to the cash shares of deficiency debited in effect to each member by methods (c), (d) and (e). These are as follows:—

AGE.	Method.			Method.		Method.	
	(c)			(d)		(e)	
	£	s	d	s	d	s	d
20	Nil			4	4	5	7
30	0	3	0	4	10	5	7
40	0	7	0	5	8	5	7
50	0	13	0	7	2	5	7
60	1	3	10	9	10	5	7
70	2	5	7	15	0	5	7

Dealing first with the cases of increase of contributions, it will be agreed that in principal, method (c) is, of the five plans, the most equitable, but on referring to the statement of equivalent contributions it is seen that the amounts under this method increase rapidly with age and result at the age of 60 in more than doubling the contribution hitherto paid, and at the age of 70 in the increase of such contribution by £2 5s. 7d., *i. e.*, from 19/6 per annum to £3 5s. 1d. Such a method, however desirable in theory, is therefore wholly impossible of practical application. Method (d) is less equitable theoretically, and practically is also excluded by the large increase of contributions at the old ages which it necessitates. Method (e)—uniform increase of contributions—is the system generally preferred by friendly societies, but it will be seen to be the most inequitable of all the possible plans, as it places the maximum charge upon the youngest members who by hypothesis have created no part of the deficiency, and debits the minimum liability to the oldest members who are responsible proportionately for the existence of the greatest part of the deficiency.

Reverting to the alternatives of reduction of sick pay, it will be seen that method (a)—reduction of all benefit by one-sixth—whilst inequitable so far as it places some part of the deficiency on the younger members, does, at any rate, act in the direction of equity by debiting a minimum sum to the youngest and a constantly increasing charge (up to the age of 70) on the older members. Method (b) is still less inequitable both in its effect upon the younger members and as giving a charge at the higher ages approximating to that presented by method (c), which as above suggested, may be regarded as the theoretical ideal.

From these examples it is clear that the reduction of benefits will operate more equitably, in general, than the increase of contributions on any scale that would be regarded as practicable, and if the reduction of benefits be advised in the valuation reports it will be wiser of lodges to accept that course, and if need be to give young members the opportunity of effecting new assurances, according to present ages, of such additional benefits as will bring the amounts up to the original scale, than to repudiate the actuarial recommendation and to substitute some uniform increase of contributions in which no regard is paid to the relative values of the burdens respectively placed upon young and old members.

Sufficient has been written to show that the favorite method of uniform increase of contributions is, of all practicable plans of dealing with deficiencies the most inequitable in operation. It remains to be shown that it is the least effective. The calculations have proceeded so far upon the assumption that all members remain in the assumed society, and accept the sacrifices imposed upon them, but the position should also be examined on the assumption that (a very general consequence of reforms) the young members refuse to agree to the changes and withdraw. At the youngest age the full benefits and contributions are of practically equal value, and any change in either the one or the other sets up "negative values," which are immediately lost on the withdrawal of the members concerned. If, therefore, it be assumed that the 30 members taken as at the age of 20 withdraw, the deficiency is partially restored by all methods except (c). Such restored deficiency with the corresponding proportion of assets to liabilities is as follows:—

- (a) Deficiency, £109; percentage of assets to liabilities, 95.
- (b) Deficiency, £ 70; percentage of assets to liabilities, 97.
- (c) Deficiency, Nil; percentage of assets to liabilities, 100.

- (d) Deficiency, £153; percentage of assets to liabilities, 94.
 (e) Deficiency, £193; percentage of assets to liabilities, 92.

Whilst method (c) alone would leave the position unaffected, the adoption of method (e), embodying the equal increase of contributions would be followed by the re-appearance of over one-third of the original deficiency and the decline of the assets to 92 per cent of the liabilities. The results produced by such method would consequently fall seriously short of those intended, and the necessity for a further adjustment at a very early date would be set up. When the second adjustment came to be made it would be found the more difficult of application because the society would have lost all its youngest members and would have to impose an entirely undeserved burden upon the younger of those remaining.

It may be suggested to us that the withdrawals resulting from the adoption of re-formative measures are not confined to young members, and that the profits from secessions at the more advanced ages will be sufficient to counterbalance the losses sustained by the lapse of youthful contributors. In some cases, and to some extent, this may be the experience; but, as we explain elsewhere, the members of advanced age who withdraw are very frequently persons of superior health or financially independent of the sick pay, and the result of their defection is to lessen the contribution income whilst leaving the volume of claims virtually unaffected; an apparent immediate profit being thus neutralized by a subsequent increase in the rate of sickness amongst the members remaining. The expectancy of profit from this source is, therefore, in great measure, illusory and little weight should be given to it.

As a final experiment we have assumed that no measures are taken for the rectification of the position and that the society maintains the present financial arrangements until the funds are exhausted and it breaks up. We have ascertained what is the present equivalent of the average financial loss sustained by those members who will be surviving at that date, which we find to be 35 years distant; and when, therefore, the youngest member will be aged 55. For greater clearness we have assumed that no new members will be admitted. This assumption in no way lessens the value of the experiment, for whilst new members accepted on contribution terms that are adequate as regards their own benefits may prolong the life of a society in deficiency they cannot perpetuate it. Collapse is inevitable if no re-formative measures are taken, and it is merely a question as to which particular members are to be the victims.

It is found, then, in the event supposed that the funds are exhausted after 35 years, at which period the total number of members surviving will be 43. On ascertaining the average amount of funds that ought to be in possession at that date in respect of each member, and allowing for interest from the present up to that time, the following represents the loss per member sustained, this being exhibited according to the present number and ages of the members.

Present Age.	Present Value of Average Loss per member (for all members now existing) by exhaustion of fund after 35 years		
	£	s	d
20.....	8	10	0
30.....	8	16	10
40.....	4	19	0
50.....	0	14	8
60.....		Nil	
70.....		Nil	

Thus the greatest loss falls upon the youngest members—those now aged 20 and 30—whilst in the case of the present old members, whose lifetime the Society will last out, the loss is nil. The effect, on the average, of repudiating reform in such a case may be described as taxing a man of 20 to the extent of £8 10s. od., having already charged him the full contribution for his benefits, whilst putting no tax whatever on the man of 70 to whose original shortcomings (with those of his deceased contemporaries) the deficiency is attributable.

It will be noted that in the above table the average loss per member existing at each present age is given. Whilst all surviving will be too old to join another society

35 years hence, and in that sense will suffer positive loss, the members most affected by the collapse of the society will be those whose deteriorated condition of health, or perhaps actual invalidism, will have made them prospective claimants of large amounts. It is clearly impossible to gauge the full extent of the injury sustained in such cases, and as no young member can foresee whether he personally will be so situated many years hence as to need the constant help of his society, it should be realized by each one that whilst the average loss is serious there is a probability that the loss to him individually may be far in excess of that average.

I desire to direct particular attention to the concluding paragraphs.

Court decisions in this country prevent a readjustment by reduction of benefits, unless with written consent of the insured, nevertheless the Messrs. Watson clearly demonstrate that greater equity can be obtained by reducing benefits than by increasing contributions.

The reason why inequity results when contributions are increased is that it is impracticable to make the increase for advanced ages proportionate to the deficiencies created by the aged members.

This is strongly brought out by the analysis of readjustment plan (c), which Messrs. Watson declare to be the ideal reformative measure, considered theoretically, but impractical when applied to actual conditions:

The effect of a readjustment which goes to the extreme in burdening the young members, such as indicated by plan (e), is forcibly demonstrated by the Unity Actuaries.

The effect of doing nothing is graphically set forth in the concluding demonstrations.

At a small outlay the Eighth Valuation Report, made by the Messrs. Watson, can be secured from the Manchester Unity Offices, 97 Grosvenor Street, Manchester, England, and I commend it to those who desire to pursue this subject.

The general method for readjustments in the United States and Canada has been to increase the contribution rates, with options for continuing the existing rates and having designated amounts charged as liens against certificates to be deducted at death (sometimes with and sometimes without interest).

When actuarial advice has been ignored or never sought the favorite method has been to adopt a net contribution scale according to some standard table of mortality (most often the National Fraternal Congress Table of Mortality and 4 per cent interest) and apply these rates as of ages at entry into the Society, and to apply the same rates to new members at their attained ages on entering the Society. All members were then put into mutual cooperation and the excess contributions of the recent entrants commingled with the common funds, and largely, if not entirely, used to make good the deficiencies in the rates of the older members.

This combination of inadequacy and injustice could end in nothing but failure.

With readjustments must not be confused the heretofore common practice of societies adopting new contribution scales for new members while leaving the old members on original schedules, and then commingling contributions and accumulation to the great advantage of the older members, and equally to the detriment of the entrants upon the increased rates.

The rerating of members at ages of entry, but compelling them to contribute on the same scale as new members, being justly characterized as unfair and inequitable to the recent entrants, where the latter are placed into the class with existing members, it is unnecessary to comment upon the method of leaving existing members upon inadequate rates, and placing new members upon an increased, and often a *per se* adequate scale, and then making one class of the whole membership.

The readjustments of rates by Societies of the United States and Canada have almost universally favored two classes of members; one class being those at advanced ages and the other those who have been members for a number of years.

The results of such readjustments have always created deficiencies by the concessions granted to these two classes of members.

Notwithstanding these concessions, it has been the exception when the readjustment was accepted by the membership without dissatisfaction, dissension and withdrawal. Usually the withdrawals being of the good lives.

Even with the most liberal concessions, rates of contribution for the members at advanced ages were very high when consideration is had of the very low rates of contribution which the members had been accustomed to paying. This fact has always caused dissatisfaction amongst the aged members, which has been reflected upon the younger, resulting in heavy withdrawals, and these withdrawals have in turn affected the death rate of the remaining members unfavorably.

In most instances the adverse selection due to withdrawal of young and recent entrants has passed away within two, three or four years, and a return to normal death rate has been the rule. However, I have known cases where the adverse and unfavorable conditions continued indefinitely, making a second readjustment necessary. In cases where this second readjustment did not place the organization in a financially sound condition, ordinarily a third change resulted in decay and final dissolution of the Society.

A large number of Societies have adopted readjustment where the members younger than a certain designated age were required to pay as of their attained ages the contribution rates based upon some standard mortality table, while the members older than the designated age have been given a rate less than that for the attained age and many times have been given the level rate as of the designated age, say 55, 60 or 65 or 70. In these cases, of course, the Society was divided into two classes, one being those who were favored with rates less than the attained age at the time of the readjustment and others charged the full rate under the assumptions of some mortality table, usually the National Fraternal Congress Table of Mortality with 4 per cent interest,

In a number of cases the readjustment has been made so that the members younger than a designated age have been charged the rate according to some standard table as of their attained ages at the date of re-rating, while members older than the designated age have been given a lower rate than the one justified by their attained ages, and in addition to this all of the available funds of the Society have been assigned for the purpose of meeting the deficiency created by the concessions to the aged members.

One Society with about 30,000 members assigned upwards of a million dollars to the members above age 65, while another Society assigned upwards of three millions of dollars to members above age 55. In another instance something over two millions of dollars were assigned to members according to the duration of membership; no member receiving any credit who had not been a member for at least eighteen years; and this assignment was increased according to the advanced age of the members. The amount assigned to the youngest members, entitled to credit because of duration of membership, was a few cents, while to the oldest members the credit was several hundred dollars on each thousand of insurance.

In a noted readjustment where no funds had been accumulated prior to the re-rating, the Society adopted rates for members to age 65 with a level and uniform rate thereafter. The rates below age 65 were loaded for a fraternal contribution

which was levied upon all members below a designated age and added to their rates, which latter were sufficient to provide for their protection. The younger members have never been heard to make any complaint on account of this extra charge against them for the purpose of rendering aid to the members above a certain age. There prevails a general sentiment that aged members, regardless of whether or not they need assistance, should have something appropriated from the contributions of the younger members for their relief from the payment of assessments according to their ages and the risk assumed by the Society.

Comparatively few readjustments in the United States and Canada have been upon a thoroughly adequate basis from the beginning. Ordinarily, in the course of operation, other changes have been required to place the organization in a sound financial position. These second changes are dangerous, as well as difficult. The Societies in their present condition are now confronted with these dangers and difficulties which are aggravated by the situation in respect of securing new business.

When the Societies were comparatively new and the membership massed at the younger ages and the contribution rates lower, business was easily and cheaply secured. When the Societies were older and the membership at the advanced ages and contribution rates increased, then the situation was entirely changed in reference to the field work. The members discontinued their efforts in the way of securing new members, and the whole work was left entirely to deputies and organizers. This brought about a condition not materially different from that existing in the Life Insurance business in respect of the company employing agents. The mere fact of calling the solicitor "deputy" or "organizer" has not made the cost of their service materially less than the cost of employing life insurance agents. In these circumstances the cost for securing members by fraternal beneficiary societies approximates the cost of getting policy-holders for life insurance companies.

It has long been the slogan of the fraternal societies that their expenses have been only a small percentage of the expenses of life companies. When the requirements for expense increased, managers of fraternal societies have adopted many devices in the effort to meet these requirements without direct taxation of the membership. In fact, it has been impossible for them to collect in the way of a per capita tax the amount necessary for expenses, and when they load the net contribution rates sufficient to cover the expenses, then the rates are so high that members complain and say that they are compelled to pay as much to the fraternal societies as they would have to pay to the life companies, with the apparent conclusion that if they make as large contributions to the fraternal societies as to the life companies, then they must, by reason of that fact, prefer the companies. Therefore, one of the most serious conditions arising out of readjustments of contribution rates is the one in reference to the expense of management and of securing new business.

PROVISION FOR EXPENSES.

Previous to 1900 it was the exception for total expenses for general management of a fraternal beneficiary society to exceed \$2.00 per member per annum.

When new members were introduced they were required to pay an initiation fee of \$3.00 to \$10.00. If the fee was low, then the applicant was required to pay for his medical examination.

There were few paid solicitors, and the original Uniform Bill, prepared and advocated by officials of fraternal societies, made it a condition precedent to admission to do business in the States that the society should not have paid solicitors or agents to secure members for an organized lodge.

There were paid organizers and lecturers whose duties were to organize new local bodies, and for that purpose to solicit members until the requisite number for organization was secured, and then to visit organized bodies and enthruse the members by public talks and entertainment.

After the employment of paid solicitors, or deputies, the local bodies could say whether or not their lodges were "open" or "closed" to them.

Very often the local lodge would elect from its members a deputy or solicitor to be paid from the lodge funds.

Other lodges depended entirely upon the work of the members, and the initiation fees went into the lodge treasury for entertainments.

Many societies then (and a few now) had State jurisdictions which were required to bear the expenses and perform the work of securing new members.

In all cases the initiation fee covered the expense incident to the introduction of new members, excepting the work and indirect influence of organizers and lecturers who were usually paid from the general funds of the supreme body.

Those societies which were first to adopt adequate contribution scales for new members found it impossible to collect the initiation fee when charging a rate for the same promised benefit 25 per cent, 50 per cent and 100 per cent in excess of the assessment rates of competing societies on inadequate contributions.

Losing the initiation fee compelled resort to other means to obtain expenses to secure new business.

To add a sufficient percentage loading to the already (comparatively) high net adequate rates so increased the contributions that few officials believed it possible to secure new business, and a common practice was to appropriate for promotion expenses the first one, three, six, eight, nine and even twelve monthly payments. This, of course, rendered otherwise adequate rates deficient, and increased the inadequacy of those approximately adequate.

Some societies took the chance of securing new members in the old way and at the old low assessment of for expenses, but soon discovered that the increased rates under readjustment (for several reasons) caused the members to discontinue their efforts to bring in new members, and their apathy—or worse—made successful deputy work very difficult as well as very expensive.

This condition induced conservative and experienced officials to encroach upon the net contributions (already burdened with deficiencies due to concessions granted to aged members under readjustment). This practice was quite general and was excused on the plea that it was only a temporary expedient to meet an abnormal situation.

Conditions after readjustment were so trying and the difficulties so great that I have consented to such expedients, hoping and trusting that the judgment of the officials was correct, and myself believing that dissension, dissatisfaction and agitation could not continue for more than two or three years, and on recovery to normal condition the appropriation from the net contributions could be discontinued. It appeared better to take this risk than to create new disturbance by calling for additional expense contributions.

No one can appreciate the difficulties following an adequate rate readjustment unless he has had to meet and try to overcome them. Anyone so situated will take chances with hope on the prospect of future favorable conditions rather than aggravate troubles due to no fault of the management.

In many cases the hope was realized. In most instances the increased fund for expenses brought about high-pressure methods, and new members were introduced at the front only to make their exit at the back door.

Bonuses, prizes, excursions, tours and large cash commissions were offered, with the usual result of such methods that members were lost almost as fast as secured with small gain from large expenditures and often an adverse mortality experience amongst the members at admission ages, due to the nearly equivalent influx and efflux of fresh lives and the natural sediment from such flow in the way of early deaths and impaired risks. In other words, any such method for securing new business makes of the society a duct, with refuse and settlings the main leavings.

I have protested in vain against the inauguration of such methods, often consenting to a moderate temporary encroachment upon net contribution rates. The field men would clamor for larger appropriations, and the officials and agency managers, in their laudable desire to prevent loss in membership, would yield to pressure, with ultimate unsatisfactory results.

At this writing, all of the societies (with few exceptions) have changed contribution rates to some degree, and nearly all of them are struggling to maintain their business without taxing the members with increased expense charges.

There are various methods for creating an expense fund.

Some societies rely entirely upon a per capita tax. Some have a per capita tax and an additional level or percentage loading to the net rates. Some have a per capita tax and take a stated number of the first twelve monthly assessments. Some take a percentage of the gross rates and, in addition, use all or some portion of the first twelve assessments. Others take a flat amount from the gross rates and use all or a portion of the first twelve assessments. Others take a flat amount (or percentage) of the gross rates and in addition 50 cents, 60 cents, 75 cents to \$1.00 from each of the first twelve monthly payments.

There are numerous other methods to provide for expenses, but the above will cover the majority of cases.

There is no fixed rule for general application in the provision for expenses.

The method of taking from the first twelve assessments a level amount of 50 cents, 60 cents, or 75 cents, and then having a per capita tax, or in subsequent years deducting a flat (or percentage) amount from the gross rates, more nearly than any other accords with the old practice of a per capita, or flat or percentage loading, and an initiation fee. The deduction of 60 cents per month (\$7.20 a year) provides about the average initiation fee, and when its value in the way of annuity addition is loaded into the rate the member pays back to the society the amount of the deduction. Formerly he paid the initiation fee in one sum or in two, four or twelve instalments. He pays back the \$6.00, \$7.20 or \$9.00 by instalments covering the period of protection, and thus each instalment is small and is therefore paid without objection. It is a device for collecting the initiation fee from an entrant without his special knowledge of the fact.

Many conferences have been held by officials and managers of fraternal societies concerning "adequate rates," and many supreme bodies have passed upon the question of "adequate rates," but no concerted attempt has been made to come to an agreement in regard to expense provision, and yet this is a matter of so much importance that the failure to properly and effectively provide for expenses may result in financial insolvency.

FRATERNAL EXPERIENCE TABLES.

In 1904 a number of the leading fraternal beneficiary societies readjusted contribution rates on the basis of the National Fraternal Congress Table of Mortality. The readjustment agitation was so general that question arose as to the sufficiency of the N. F. C. table, resulting in a request from the president of the members of the Congress to supply data for a test of that table.

The suggestion of President Talbot was favorably received, and, under instructions of the Congress, the Committee on Statistics and Good of the Orders made a report in 1906 at Montreal, from which I take the following:

Your committee herewith submits its special report to which reference is made in the regular report concerning the collection of data of the societies under a resolution offered by Doctor Oronhyatekha, past president, at the last session of the Congress, which resolution was as follows:

"Resolved, That the executive committee of this Congress be authorized to take such steps as they may deem best to secure correct data for a minimum table for a society in a normal condition, based on the experience not only of societies but the experience of life insurance companies as well."

Letters were sent to all of the societies in the United States requesting the data on forms which were supplied by the chairman of the committee, a sample of which is attached to this report as an exhibit and which fully sets forth the information which was desired and which was supplied to the actuaries for such societies as furnished the same. The names of the societies responding are as given below, grouped according to whether or not they admit men only, women only, or men and women:

SOCIETIES ADMITTING MEN ONLY.

NAMES.	Commenced Business.	Members, Dec. 31, 1904.	Exposures During 1904.
Knights of Maccabees of the World.....	1883	325,071	341,255.0
Modern Woodmen of America.....	1883	690,881	689,265.5
Shield of Honor.....	1875	13,204	13,074.5
Society des Artisans.....	1877	23,020	21,647.5
Catholic Mutual Benefit Association.....	1876	57,028	59,221.0
Knights of Father Mathew.....	1881	4,124	4,038.0
Improved Order of Heptasophs.....	1878	55,377	55,228.0
Knights of Pythias, Endowment Rank.....	1877	68,202	67,582.0
Knights of Honor.....	1873	40,126*	46,129.5*
Ancient Order United Workmen (22 Juris).....	1868	219,490	248,790.5
Knights of Modern Maccabees.....	1881	116,205*	119,684.5*
Tennessee Jurisdiction of A. O. U. W.....	1875	1,911	2,025.5
National Union.....	1881	65,372	66,993.5
Royal Arcanum.....	1877	305,083	295,673.0
Loyal Association.....	1889	7,246	7,115.0
Woodmen of the World (Pac. Juris.).....	1890	90,680	90,687.0
Totals.....		2,083,020	2,128,410.0

SOCIETIES ADMITTING WOMEN ONLY.

NAMES.	Commenced Business.	Members, Dec. 31, 1904.	Exposures During 1904.
Ladies of Maccabees of the World.....	1892	123,434	119,367.5
Royal Neighbors of America.....	1895	83,423	79,292.5
Ladies of the Modern Maccabees.....	1890	61,880	60,176.0
Ladies' Catholic Benevolent Association.....	1890	89,808	89,392.0
Totals.....		358,545	348,228.0

SOCIETIES ADMITTING MEN AND WOMEN.

NAMES.	Commenced Business.	Members Dec. 31, 1904.	Exposures During 1904.
American Benefit Association	1893	5,101	4,936.5
Association Canado-Americaine	1897	5,298	5,219.0
Equitable Fraternal Union	1897	14,644	13,561.0
Fraternal Brotherhood	1896	23,412	22,048.5
Loyal Mystic Legion of America	1892	6,718	6,707.5
Order Mutual Protection	1878	8,101	8,133.5
Order of the White Cross	1900	1,836	1,688.5
Protected Home Circle	1886	55,736	58,652.0
United Order Pilgrim Fathers	1879	19,698	20,986.0
Sons and Daughters of Protection	1897	1,794	1,842.0
United Presbyterian Mutual Benefit Association	1897	3,128	3,212.5
Legion of the Red Cross	1885	2,549	2,666.5
Royal Highlanders	1896	18,553	17,775.5
Court of Honor	1895	67,815	68,612.5
Mystic Workers of the World	1896	32,550	30,961.5
Prudent Patricians of Pompeii	1897	7,379	7,343.0
United Order of Golden Cross	1876	18,558	19,620.5
Fraternal Mystic Circle	1885	14,503	15,396.0
Knights and Ladies of Security	1892	46,161	44,924.0
Fraternal Union of America	1896	24,045	24,047.5
Modern Samaritans of Duluth	1897	6,758	6,437.0
Fraternal Tribunes	1897	9,696*	9,103.0*
Royal Templars of Temperance	1870	7,620†	9,654.5†
Totals		401,653	403,528.5

SUMMARY.

NAMES.	Number of Societies.	Members, Dec. 31, 04.	Exposures During 1904.
Societies admitting men only	16	2,083,020	2,128,410.0
Societies admitting women only	4	358,545	348,228.0
Societies admitting men and women	23	401,653	403,528.5
Totals	43	2,843,218	2,880,166.5

NOTE.—Numbers marked with * give data for 1905 instead of 1904; numbers marked with † give data for 1903 instead of 1904.

The committee desires to thank the officials of the above named societies for their compliance with the request to supply the data and also to thank the secretaries for the neatness of the forms submitted.

Many of the reports gave the data by amounts, and as it was decided that the experience should be based upon lives instead of amounts of protection, it was necessary in many cases to make combinations, which required a considerable amount of work in the office of the actuary.

The committee has inspected and examined all of the original reports, together with the compilations made therefrom; also the tabulations and deductions afterwards prepared and which are now subject to inspection by any member of the Congress. It is impossible for your committee to render a detailed statement that would present the amount of work which has been done by the actuary inasmuch as the compilations and tabulations fill hundreds of large sheets. Perhaps only those whose business it is to work with statistics can fully appreciate and realize the amount

of labor necessary to produce one column of figures representing the death rate of the 43 societies. Each one of the 43 organizations sent in three sheets showing the members in good standing at the end of the year of observation and the member who had lapsed and died during the year. These statistics were not combined so as to obtain three corresponding sheets with a combined showing of existing members and of members who had lapsed and died, and from this latter the combined exposures obtained, but the actuary worked out separately for each society the exposures in order to obtain the death and lapse rates for each one individually. Seven separate sheets, as hereinafter stated, were prepared for each of the 43 societies and these should be taken into consideration and inspected by the officials of each society. After obtaining the individual statistics for each society and treating them as above indicated, the four separate combinations were made as heretofore stated, for societies that admit men only, that admit women only and that admit men and women and then for all of the societies combined. The work consisted in preparing data from each of the 43 societies which could be used in constructing mortality tables for each of the societies. Your committee repeat that it is almost impossible for anyone to fully appreciate the amount of labor involved unless he make personal inspection of the trunk full of papers which have been submitted to your committee by the actuary.

To obtain exposures for death rate there was taken the sum of all the members in good standing at the end of the year who had entered the society in previous years and one-half of all of the members existing at the end of the year who had joined the societies during the year and one-fourth of all the members who lapsed during the year and all of the deaths during the year.

To obtain the exposures for lapse rate there was taken the sum of all the members existing at the end of the year of observation who had entered the society in previous years, and one-half of all the members existing at the end of the year who had entered during the year, and one-fourth of all the members who died during the year, and all of the members who lapsed during the year.

To obtain the death rate the number of deaths during the year was divided by the number of exposures.

To obtain the lapse rate the number of lapses during the year was divided by the number exposed to the risk of lapse during the year.

The death rate obtained as above mentioned is the unadjusted death rate according to the actual experience of the societies. This unadjusted death rate, as will be seen by reference to the tables herewith submitted, is irregular by attained ages and by years of membership. Not only is this original and unadjusted death rate irregular, but it embraces only those years covered by the experience of the societies, which in this case is for thirty-four years of membership and to age ninety for the oldest exposed risk. In order to convert this unadjusted data into practical form it was necessary to grade and extend the unadjusted death rate.

There are several well known formulas by which the mortality experience can be graded or adjusted. One is the so-called "Makeham" formula, which recognizes the "Force of Mortality." Another is by the graphic method, and still another by the summation method, which latter was adopted in the grading of the mortality experience herewith submitted. In the case of the forty-three combined societies and in the case of the experience for men only and for men and women the formula selected was that used by Mr. Watson in grading the experience of the Manchester Unity. The one selected for grading the experience of the societies that admitted women only was the "Hardy" formula given in his prize essay on Friendly Societies. There were several gradings or adjustments by different formulas, but the ones just mentioned gave the most satisfactory results as evidenced by the tests of the grading submitted by the actuary.

The actuary has given the number living and the number dying, assuming 100,000 lives at the lowest age, according to the unadjusted and the adjusted death rate for the combined forty-three societies.

The committee have thought it advisable to make the above brief explanation for the benefit of those who may desire to critically examine the statistics and deductions submitted by the actuary.

It is assumed that the members of the Congress will be most interested in the rates of contribution which have been derived from the several mortality tables herewith submitted. For the information of the members we present in comparative form the net annual level rates of contribution per one thousand dollars protection, for death benefit only, according to the National Fraternal Congress Table of Mortality and according to the combined experience of the forty-three societies as ob-

NET ANNUAL RATES OF CONTRIBUTION PER \$1,000.

Age.	N. F. C.	43 Societies.	Women.	Men.	Men and Women.
17.....	\$.....	\$ 9.25	\$ 9.29	\$ 9.20	\$ 8.98
18.....	.....	9.48	9.50	9.45	9.23
19.....	.....	9.73	9.71	9.73	9.48
20.....	10.34	10.01	9.94	9.99	9.75
21.....	10.62	10.30	10.18	10.30	10.04
22.....	10.92	10.58	10.44	10.58	10.32
23.....	11.24	10.90	10.70	10.90	10.63
24.....	11.57	11.22	10.99	11.24	10.95
25.....	11.91	11.56	11.29	11.59	11.29
26.....	12.28	11.94	11.62	11.99	11.64
27.....	12.67	12.35	11.94	12.40	12.02
28.....	13.07	12.77	12.30	12.85	12.43
29.....	13.50	13.24	12.66	13.33	12.85
30.....	13.96	13.73	13.06	13.81	13.33
31.....	14.43	14.25	13.46	14.36	13.81
32.....	14.93	14.79	13.89	14.90	14.34
33.....	15.47	15.36	14.36	15.51	14.87
34.....	16.02	15.95	14.84	16.12	15.42
35.....	16.62	16.57	15.36	16.76	16.00
36.....	17.24	17.25	15.92	17.47	16.60
37.....	17.90	17.94	16.48	18.20	17.25
38.....	18.59	18.71	17.12	18.98	17.91
39.....	19.33	19.51	17.78	19.78	18.65
40.....	20.11	20.36	18.52	20.68	19.41
41.....	20.93	21.28	19.28	21.60	20.26
42.....	21.80	22.22	20.09	22.59	21.17
43.....	22.72	23.27	20.96	23.61	22.11
44.....	23.69	24.35	21.89	24.71	23.08
45.....	24.72	25.48	22.93	25.89	24.16
46.....	25.81	26.73	24.00	27.16	25.23
47.....	26.97	28.03	25.15	28.52	26.39
48.....	28.20	29.43	26.39	29.94	27.63
49.....	29.51	30.93	27.72	31.47	28.92
50.....	30.91	32.51	29.06	33.12	30.31
51.....	32.39	34.21	30.50	34.85	31.81
52.....	33.97	36.05	32.06	36.67	33.38
53.....	35.65	37.99	33.69	38.64	35.12
54.....	37.45	40.03	35.50	40.72	37.01
55.....	39.36	42.18	37.41	42.91	38.88
56.....	41.41	44.46	39.54	45.22	40.90
57.....	43.60	46.86	41.73	47.67	43.10
58.....	45.94	49.49	43.98	50.27	45.43
59.....	48.45	52.20	46.21	52.95	47.97
60.....	51.13	55.08	48.49	55.88	50.67
61.....	54.01	58.16	50.82	59.00	53.62
62.....	57.10	61.44	53.28	62.34	56.78
63.....	60.41	64.95	55.88	65.81	60.16
64.....	63.98	68.72	58.72	69.65	63.58
65.....	67.82	72.65	61.94	73.65	67.14
66.....	71.95	76.88	65.38	77.95	70.83
67.....	76.40	81.44	69.18	82.60	74.41
68.....	81.21	86.23	73.27	87.64	78.22
69.....	86.39	91.41	77.68	93.12	82.02
70.....	92.00	97.04	82.31	99.09	86.07

NOTE.—Contributions to be paid annually in advance for the whole term of life and provide for death benefit only.

tained by the actuary; also rates according to the experience of those societies admitting women only and of those societies admitting men and women and of those societies admitting men only.

It will be observed that the rates of contribution according to the National Fraternal Congress Table are in excess of those deduced from the experience of the combined experience of the forty-three societies for ages below 36. The rates at age 36 are respectively \$17.24 and \$17.25 and above that age the rates according to the combined experience of the forty-three societies are slightly in excess of the National Fraternal Congress rates to age 50, varying from one cent annually at age 36 to \$1.60 at age 50. Above age 50 the excess in the rates for the combined experience becomes larger as the age advances until at age 70 the level annual rate of the National Fraternal Congress Table is \$92.00 and by the combined experience \$97.04.

It should be noted that the above rates are annual rates to be paid in advance and are upon the assumption of four per cent interest earned on accumulations. Rates payable monthly would be somewhat in excess of one-twelfth of the annual rates, due to the loss of interest and also to the loss of monthly installments on account of members who die and lapse before the end of the year.

The totals show that the expected deaths by the National Fraternal Congress Table were 26,239; the actual being 95.75 per cent of the expected. The per cent exposed below age 50 was 82.90, while the per cent of deaths below age 50 was 56.68.

The expected deaths by the American Experience Table were 9,322 in excess of the actual deaths; the actual being 72.94 per cent of expected. It may be stated in passing that these figures certainly established the fact that the American Experience Table of Mortality could not be correctly designated as a "minimum" table for fraternal beneficiary societies.

Your committee is of the opinion that the National Fraternal Congress Table of Mortality is sustained by the actual experience as an acceptable "minimum" table for fraternal societies where admission of members is confined to persons whose ages are not above age 50. Your committee is not prepared to say that rates of contribution deduced from the National Fraternal Congress Table would be inadequate for persons admitted to ages 55 or even 60 if proper medical selection is exercised, because it is a fact that under proper medical examination the death rate during at least the first five years of membership for entrants between the ages of 50 and 60 is below that which is assumed under the National Fraternal Congress Table.

Your committee further desires to call attention to the fact that the great majority of the societies composing the Congress do not admit members above age 50, and consequently the experience which has been investigated has not been modified above age 55 by favorable mortality resulting from the admission of new lives freshly selected by medical examination. The actuary is of the opinion that the higher death rate above age 53 is, in a measure, the result of the absence of new risks amongst the members above age 50.

Your committee call attention to the fact that the data we have compiled are such that from them "Select" and "Ultimate" tables can be readily made at any time.

The resolution contemplated a presentation by your committee of the experience of life companies, and an effort was made to secure data from companies in the United States and Canada. Courteous replies were received from 23 companies, acknowledging the importance of the work and expressing appreciation of the undertaking, but regretting inability to comply with the request for data on account of the very heavy demands for special information required by investigating committees in New York, Wisconsin, Iowa, New Jersey and the Dominion of Canada. Your committee submits a number of mortality tables which have been constructed from various experiences and may be of value for comparison.

The actuary will supplement this report with some comments on tables and schedules of rates derived from the separate experiences, to which references have been made. The rates of contribution for societies admitting women only are below those given in the other schedules, which is largely due to the fact, as your committee is advised, of the lack of exposures at advanced ages to give a basis for a reliable table. Your committee submits two mortality tables for female lives as a better guide than the table which has been based upon the four women's societies that favored your committee with data.

SUPPLEMENTAL REPORT.

Supplementary to the "Special Report" of the Committee on Statistics and the Good of the Orders the following notes were submitted by Mr. Landis:

First. The experience of the 43 societies is for a single year of operation. Unless the selected year is a normal one, the results could not be accepted as reliable. If it were specially healthy or unhealthy obviously it would be unsuited as the basis for an investigation which aimed at average results.

The year 1904 was selected because the conditions appeared normal in respect of mortality. There was some disturbance on account of readjustment of rates of contribution, causing an increase in lapse rates and somewhat increasing the death rate, especially at ages above 50 through loss of good lives. With these exceptions the year 1904 was an average year, and since there were nearly three million exposures, widely distributed throughout the United States, the experience must be accepted as approximately representing past and present and forecasting future mortality conditions amongst insured lives in Fraternal Beneficiary Associations operating along existing lines.

Second. To what has been said by the committee in reference to the grading of the tables, it may be added that this investigation has disclosed conditions which have been found in so many others that a mere mention of them is sufficient. I refer to the feature of a higher death rate at the lowest admission ages than at ages from 25 to about 35, and the almost uniform ratios for the ten years 35 to 45. The unusual showing is the decrease in the increase of mortality for ages after 70.

If the adjusted rates are to reflect actual conditions (as they should), these characteristics must remain, and to that end I made use of formulas, as explained by the committee. The modern and best thought amongst actuaries is in favor of such grading as will retain the true character of the original data, and to abandon those analytical methods which have made so many tables a mere fiction.

As before stated, the only object was to smooth out the irregularities which are always present in vital statistics, without destroying the characteristic features of the experience. When the actual death rate at 20 is higher than at 30 (as is found in almost every investigation of insured lives) the adjusted table should retain that feature, and any grading which destroys it, results in a fiction, however much it may please the theorist who would confirm his ideal of a "Law of Mortality."

FORTY-THREE SOCIETIES.

Age.	Existing.	Lapses.	Deaths.	Exposures.	Unadjusted Death Rate per 1000.	Adjusted Death Rate per 1000.
16	295	39	.....	167.0	.....	.....
17	777	112	1	539.5	1.85	4.64
18	13,001	2,847	30	8,188.5	3.66	4.66
19	22,919	7,195	96	20,691.0	4.64	4.68
20	30,451	9,136	139	29,387.0	4.73	4.71
21	39,376	10,541	182	37,455.5	4.85	4.73
22	46,295	11,766	192	45,400.5	4.23	4.74
23	51,448	12,087	264	51,067.0	5.17	4.71
24	58,476	12,661	266	58,009.5	4.59	4.66
25	62,146	12,587	314	62,341.0	5.04	4.59
26	65,979	12,108	292	66,119.0	4.42	4.52
27	71,119	12,081	300	71,162.5	4.22	4.47
28	76,251	12,338	334	76,302.0	4.38	4.46
29	79,624	11,822	343	79,672.5	4.31	4.50
30	81,801	11,532	365	82,017.0	4.45	4.60
31	84,569	11,387	402	85,236.5	4.72	4.73
32	86,700	10,982	432	87,207.0	4.95	4.89
33	87,230	10,312	471	87,739.0	5.37	5.05
34	92,725	10,673	497	93,209.0	5.33	5.20
35	93,621	10,342	505	94,418.0	5.35	5.33
36	93,117	9,843	501	94,161.5	5.32	5.45
37	93,972	9,689	528	95,103.5	5.55	5.56
38	93,945	9,226	548	94,723.0	5.79	5.70
39	90,762	8,641	533	91,630.0	5.82	5.86
40	90,414	8,391	541	91,508.5	5.91	6.07
41	90,438	8,199	605	91,958.5	6.58	6.33
42	93,203	8,110	613	94,648.5	6.48	6.64
43	95,107	7,870	689	96,482.5	7.15	6.98
44	95,515	7,632	673	96,553.0	6.97	7.37
45	90,504	7,291	754	92,383.0	8.16	7.79
46	84,683	6,662	735	87,175.5	8.43	8.24
47	79,414	5,821	682	81,458.0	8.37	8.73
48	72,740	5,098	731	74,607.5	9.80	9.28
49	66,042	4,594	683	67,717.0	10.09	9.92
50	59,284	4,051	614	61,071.0	10.05	10.67
51	51,645	3,445	616	53,662.0	11.48	11.55
52	45,285	2,712	583	46,962.0	12.41	12.59
53	40,831	2,330	587	42,348.0	13.86	13.80
54	36,839	2,390	579	38,341.0	15.10	15.17
55	31,096	2,164	556	32,664.5	17.02	16.71
56	26,397	1,938	502	27,826.5	18.04	18.39
57	22,905	1,645	509	24,219.0	21.02	20.18
57	20,555	1,539	465	21,780.0	21.45	22.07
58	18,611	1,410	443	19,747.5	22.43	24.07
60	16,761	1,153	529	17,854.0	29.63	26.21

FORTY-THREE SOCIETIES.—Continued.

Ages.	Existing.	Lapses.	Deaths.	Exposures.	Unadjusted Death Rate per 1000:	Adjusted Death Rate per 1000.
61	14,998	1,063	445	15,968.0	27.87	28.53
62	13,482	856	460	14,361.5	32.03	31.06
63	12,029	826	392	12,830.5	30.55	33.88
64	10,453	721	423	11,234.5	37.65	37.00
65	8,312	597	357	8,965.5	39.82	40.40
66	7,066	554	347	7,686.0	45.15	43.99
67	5,857	528	317	6,435.0	49.26	47.70
68	4,864	513	290	5,406.5	53.64	51.54
69	4,206	449	247	4,676.0	52.82	55.76
70	3,652	403	250	4,103.0	60.93	60.85
71	3,089	388	260	3,543.0	73.38	67.22
72	2,654	325	214	3,027.5	70.69	75.12
73	2,147	228	174	2,436.0	71.43	84.07
74	1,753	198	172	2,026.0	84.90	93.55
75	1,142	149	144	1,360.5	105.84	102.55
76	826	99	115	990.5	116.10	110.28
77	554	69	96	684.5	140.25	115.98
78	418	49	72	514.5	139.94	120.26
79	325	27	46	384.0	119.79	123.62
80	200	11	22	227.5	96.70	127.68
81	136	8	21	161.0	130.43	133.48
82	81	9	13	100.5	129.35	142.65
83	73	3	18	90.5	198.89	155.47
84	16	1	2	18.5	108.11	172.11
85	4		3	7.0	428.57	191.00
86	1		1	2.0	500.00	211.55
87	6			6.0		232.48
88	3			3.0		253.40
89	2			2.0		273.76
90	1			1.0		294.17
91						314.72
92						335.96
93						357.74
94						380.02
95						404.33
96						431.47
97						462.18
98						495.12
99						531.29
100						581.73
101						666.67
102						1,000.00
	2,843,218	332,466	25,125	2,880,166.5		

FORTY-THREE SOCIETIES.

Age.	Unadjusted.		Adjusted.			
	lx.	dx.	lx.	dx.	qx.	px.
17	100,000	184	100,000	464	.00464	.99536
18	99,816	365	99,536	462	.00466	.99534
19	99,451	461	99,074	464	.00468	.99532
20	98,990	469	98,610	465	.00471	.99529
21	98,521	477	98,145	464	.00473	.99527
22	98,044	415	97,681	462	.00474	.99526
23	97,629	504	97,219	458	.00471	.99529
24	97,125	446	96,761	451	.00486	.99534
25	96,679	487	96,310	443	.00459	.99541
26	96,192	424	95,867	434	.00452	.99548
27	95,768	405	95,433	427	.00447	.99553
28	95,363	418	95,006	424	.00446	.99554
29	94,945	411	94,582	426	.00450	.99550
30	94,534	421	94,156	432	.00460	.99540
31	94,113	443	93,724	444	.00473	.99527
32	93,670	465	93,280	454	.00489	.99511
33	93,205	501	92,826	469	.00505	.99495
34	92,704	494	92,357	479	.00520	.99480
35	92,210	493	91,878	490	.00533	.99467
36	91,717	489	91,388	497	.00545	.99455
37	91,228	507	90,891	505	.00556	.99444
38	90,721	524	90,386	515	.00570	.99430
39	90,197	524	89,871	526	.00586	.99414
40	89,673	529	89,345	542	.00607	.99393
41	89,144	588	88,803	562	.00633	.99367
42	88,556	565	88,241	535	.00664	.99336
43	87,991	638	87,656	612	.00698	.99302
44	87,353	609	87,044	641	.00737	.99263
45	86,744	708	86,403	674	.00779	.99221
46	86,036	726	85,729	705	.00824	.99176
47	85,310	714	85,024	743	.00873	.99127
48	84,596	830	84,281	782	.00928	.99072
49	83,766	844	83,499	829	.00992	.99006
50	82,922	834	82,670	882	.01067	.98933
51	82,088	941	81,788	945	.01155	.98845
52	81,147	1,007	80,843	1,018	.01259	.98741
53	80,140	1,110	79,825	1,100	.01380	.98620
54	79,030	1,194	78,725	1,195	.01517	.98483
55	77,836	1,326	77,530	1,296	.01671	.98329
56	76,510	1,381	76,234	1,402	.01839	.98161
57	75,129	1,579	74,832	1,509	.02018	.97982
58	73,550	1,579	73,323	1,618	.02207	.97793
59	71,971	1,614	71,705	1,726	.02407	.97593
60	70,357	2,084	69,979	1,833	.02621	.97379

FORTY-THREE SOCIETIES.—Continued.

Age.	Unadjusted.		Adjusted.			
	lx.	dx.	lx.	dx.	qx.	px.
61	68,273	1,903	68,146	1,944	.02853	.97147
62	66,370	2,126	66,202	2,056	.03106	.96894
63	64,244	1,962	64,146	2,173	.03388	.96612
64	62,282	2,346	61,973	2,293	.03700	.96300
65	59,936	2,387	59,680	2,511	.04040	.95960
66	57,549	2,597	57,269	2,518	.04399	.95601
67	54,952	2,708	54,751	2,612	.04770	.95230
68	52,244	2,802	52,139	2,687	.05154	.94846
69	49,442	2,611	49,452	2,758	.05576	.94424
70	46,831	2,854	46,694	2,841	.06085	.93915
71	43,977	3,227	43,853	2,948	.06722	.93278
72	40,750	2,880	40,905	3,072	.07512	.92488
73	37,870	2,706	37,833	3,181	.08407	.91593
74	35,164	2,985	34,652	3,242	.09355	.90645
75	32,179	3,406	31,410	3,221	.10255	.89745
76	28,773	3,340	28,189	3,109	.11028	.88972
77	25,433	3,567	25,080	2,909	.11598	.88402
78	21,866	3,060	22,171	2,666	.12026	.87974
79	18,806	2,630	19,505	2,412	.12362	.87638
80	16,176	1,224	17,093	2,182	.12768	.87232
81	14,952	1,950	14,911	1,990	.13348	.86652
82	13,002	1,682	12,921	1,843	.14265	.85735
83	11,320	2,251	11,078	1,722	.15547	.84453
84	9,069	4,447	9,356	1,611	.17211	.82789
85	4,622	2,311	7,745	1,479	.19100	.80900
86	2,311		6,266	1,325	.21155	.78845
87			4,491	1,149	.23248	.76752
88			3,792	961	.25340	.74660
89			2,831	775	.27376	.72624
90			2,056	605	.29417	.70583
91			1,451	457	.31472	.68528
92			994	334	.33596	.66404
93			660	236	.35774	.64226
94			424	161	.38002	.61998
95			263	106	.40433	.59567
96			157	68	.43147	.56853
97			89	41	.46218	.53782
98			48	24	.49512	.50488
99			24	13	.53129	.46871
100			11	6	.58173	.41827
101			5	3	.60667	.33333
102			2	2	1.00000	.00000
		97,689		100,000		

NOTE—lx = Number Living.
dx = Number Dying.

qx = Probability of Dying.
px = Probability of Living.

FORTY-THREE SOCIETIES.

Age.	Actual Deaths.	Expected Deaths by Adjusted.	Plus.	Minus.	Accumulated Error.
17	1	3	2		+ 2
18	30	38	8		+10
19	96	97	1		+11
20	139	138		1	+10
21	182	177		5	+ 5
22	192	215	23		+28
23	264	241		23	+ 5
24	266	270	4		+ 9
25	314	286		28	-19
26	292	299	7		-12
27	300	318	18		+ 6
28	334	340	6		+12
29	343	359	16		+28
30	365	377	12		+40
31	402	403	1		+41
32	432	426		6	+35
33	471	443		28	+ 7
34	497	485		12	- 5
35	505	503		2	- 7
36	501	512	11		+ 4
37	528	529	1		+ 5
38	548	540		8	- 3
39	533	537	4		+ 1
40	541	556	15		+16
41	605	582		23	- 7
42	613	628	15		+ 8
43	689	673		16	- 8
44	673	712	39		+31
45	754	719		35	- 4
46	735	718		17	-21
47	682	711	29		+ 8
48	731	692		39	-31
49	683	671		12	-43
50	614	652	38		- 5
51	616	620	4		- 1
52	583	591	8		+ 7
53	587	584		3	+ 4
54	579	582	3		+ 7
55	556	546		10	- 3
56	502	512	10		+ 7
57	509	489		20	-13
58	465	478	13		0
59	443	475	32		+32
60	529	468		61	-29

FORTY-THREE SOCIETIES.—Continued.

Ages.	Actual Deaths.	Expected Deaths by Adjusted.	Plus.	Minus.	Accumulated Error.
61	445	456	11		-18
62	460	446		14	-32
63	392	435	43		+11
64	423	416		7	+ 4
65	357	362	5		+ 9
66	347	338		9	0
67	317	307		10	-10
68	290	279		11	-21
69	247	261	14		- 7
70	250	250			- 7
71	260	238		22	-29
72	214	227	13		-16
73	174	205	31		+15
74	172	190	18		+33
75	144	140		4	+29
76	115	109		6	+23
77	96	79		17	+ 6
78	72	62		10	- 4
79	46	47	1		- 3
80	22	29	7		+ 4
81	21	21			+ 4
82	13	14	1		+ 5
83	18	14		4	+ 1
84	2	3	1		+ 2
85	3	1		2	0
89	1	1			0
	25,125	25,125	465	465	

MEN.

Ages.	Exposures.	Unadjusted Death Rate Per 1000.	Adjusted Death Rate Per 1000.	Living.	Dying.
16	112.0				
17	365.5	2.74	4.35	100,000	434
18	4,145.0	4.58	4.40	99,566	439
19	12,025.0	4.99	4.47	99,127	445
20	18,451.5	5.20	4.54	98,682	448
21	24,819.5	4.43	4.60	98,234	452
22	31,667.0	4.23	4.61	97,782	451
23	35,936.0	4.98	4.58	97,331	445
24	41,224.0	4.37	4.51	96,886	436
25	44,531.5	4.85	4.41	96,450	426
26	47,484.5	4.17	4.32	96,024	415
27	51,358.5	4.05	4.26	95,609	406
28	55,206.0	4.18	4.25	95,203	405
29	57,805.5	4.26	4.30	94,798	407
30	59,628.0	4.11	4.40	94,391	417
31	62,105.5	4.23	4.54	93,974	427
32	63,670.0	5.04	4.70	93,547	440
33	64,011.5	5.37	4.86	93,107	454
34	68,240.5	5.06	5.02	92,653	466
35	69,484.0	5.20	5.16	92,187	476
36	69,425.0	5.06	5.30	91,711	487
37	70,378.0	5.44	5.45	91,224	496
38	70,274.5	5.49	5.63	90,728	511
39	67,585.0	5.80	5.85	90,217	528
40	68,031.5	6.03	6.11	89,689	547
41	68,628.5	6.70	6.42	89,142	573
42	71,075.5	6.63	6.77	88,569	600
43	72,613.5	7.19	7.14	87,969	628
44	72,803.0	7.20	7.53	87,341	657
45	69,887.5	8.16	7.93	86,684	688
46	65,994.5	8.83	8.37	85,996	719
47	61,665.0	8.64	8.85	85,277	755
48	56,573.0	9.49	9.41	84,522	796
49	50,715.5	10.08	10.10	83,726	846
50	45,485.5	10.44	10.94	82,880	907
51	39,736.0	12.06	11.94	81,973	980
52	34,513.0	12.84	13.11	80,993	1,061
53	31,110.0	13.92	14.45	79,932	1,155
54	27,440.0	16.44	15.94	78,777	1,256
55	23,699.5	18.14	17.57	77,521	1,362
56	20,204.0	19.01	19.29	76,159	1,469
57	17,975.0	22.48	21.11	74,690	1,578
58	16,894.5	21.90	23.00	73,112	1,682
59	15,961.0	22.43	25.00	71,430	1,787
60	14,773.5	30.93	27.11	69,643	1,888

MEN.—Continued.

Ages.	Exposures.	Unadjusted Death Rate Per 1000.	Adjusted Death Rate Per 1000.	Living.	Dying.
61	13,377.5	28.93	29.43	67,755	1,994
62	12,077.0	33.45	31.93	65,761	2,099
63	10,847.5	31.43	34.71	63,662	2,209
64	9,646.5	37.84	37.74	61,453	2,320
65	7,826.5	40.25	41.01	59,133	2,426
66	6,808.0	46.42	44.45	56,707	2,521
67	5,751.0	49.73	48.03	54,186	2,603
68	4,830.0	54.45	51.78	51,583	2,670
69	4,206.5	52.78	55.98	48,913	2,739
70	3,711.0	60.09	61.20	46,174	2,826
71	3,224.5	73.81	67.92	43,348	2,944
72	2,714.0	71.85	76.42	40,404	3,088
73	2,184.0	74.18	86.21	37,316	3,217
74	1,813.5	89.33	96.75	34,099	3,299
75	1,209.0	107.53	107.04	30,800	3,297
76	851.5	117.44	116.30	27,503	3,199
77	570.5	154.24	123.71	24,304	3,006
78	395.5	144.12	129.60	21,298	2,761
79	268.0	138.06	134.13	18,537	2,486
80	163.5	97.86	138.36	16,051	2,221
81	112.0	133.93	142.83	13,830	1,975
82	46.5	150.54	148.77	11,855	1,763
83	50.0	200.00	156.59	10,091	1,581
84	7.0	130.29	166.75	8,511	1,419
85	2.0		178.37	7,092	1,265
86	1.0		191.36	5,827	1,115
87	1.0		205.12	4,712	967
88			219.72	3,745	822
89	1.0		234.64	2,923	686
90	1.0		250.26	2,237	560
91			266.29	1,677	447
92			282.72	1,230	347
93			298.90	883	264
94			314.34	619	195
95			352.94	424	150
96			484.93	274	133
97			608.50	141	86
98			807.50	55	44
99			1,000.00	11	11
	2,128,410.0				100,000

MEN.

Ages.	Actual Deaths.	Expected Deaths by Adjusted.	Plus.	Minus.	Accumulated Error.
17	1	2			+ 1
18	19	18	1		0
19	60	54		6	- 6
20	96	84		12	-18
21	110	114	4		-14
22	134	146	12		- 2
23	179	165		14	-16
24	180	186	6		-10
25	216	196		20	-30
26	198	205	7		-23
27	208	219	11		-12
28	231	235	4		- 8
29	246	249	3		- 5
30	245	263	18		+13
31	263	282	19		+32
32	321	299		22	+10
33	344	311		33	-23
34	345	342		3	-26
35	361	359		2	-28
36	351	368	17		-11
37	383	383			-11
38	386	396	10		- 1
39	392	395	3		+ 2
40	410	411	6		+ 8
41	460	441		19	-11
42	471	481	10		- 1
43	522	518		4	- 5
44	524	548	24		+19
45	570	554		16	+ 3
46	583	552		31	-28
47	533	546	13		-15
48	537	532		5	-20
49	511	512	1		-19
50	475	497	22		+ 3
51	479	474		5	- 2
52	443	453	10		+ 8
53	433	450	17		+25
54	451	437		14	+11
55	430	416		14	- 3
56	384	390	6		+ 3
57	404	380		24	-21
58	370	389	19		- 2
59	358	399	41		+39
60	457	401		56	-17

MEN.—Continued.

Ages.	Actual Deaths.	Expected Deaths by Adjusted.	Plus.	Minus.	Accumulated Error.
61	387	394	7		-10
62	404	386		18	-28
63	341	377	36		+ 8
64	365	364		1	+ 7
65	315	321	6		+13
66	316	303		13	0
67	286	276		10	-10
68	263	256		7	-17
69	222	235	13		- 4
70	223	227	4		0
71	238	219		19	-19
72	195	207	12		- 7
73	162	188	26		+19
74	162	175	13		+32
75	130	129		1	+31
76	100	99		1	+30
77	88	71		17	+13
78	57	51		6	+ 7
79	37	36		1	+ 6
80	16	23	7		+13
81	15	16	1		+14
82	7	7			+14
83	10	8		2	+12
84	1	1			+12
	19,414	19,426	409	397	

WOMEN.

Age.	Exposures.	Unadjusted Death Rate Per 1000.	Adjusted Death Rate Per 1000.	Living.	Dying.
16	.5				
17	64.0	5.35	5.43	100,000	543
18	1,139.0	6.15	5.41	99,457	538
19	3,176.0	5.35	5.40	98,919	534
20	4,162.5	4.56	5.39	98,385	531
21	5,060.5	6.32	5.42	97,854	530
22	5,570.0	3.77	5.46	97,324	532
23	6,648.5	6.92	5.49	96,792	531
24	7,562.0	5.42	5.49	96,261	528
25	8,474.0	6.25	5.48	95,733	526
26	8,926.5	4.93	5.46	95,207	520
27	9,716.0	4.63	5.47	94,687	518
28	10,484.0	5.82	5.51	94,169	519
29	11,038.0	5.80	5.60	93,650	524
30	11,451.5	5.33	5.70	93,126	530
31	11,768.5	6.88	5.80	92,596	538
32	11,976.0	5.59	5.88	92,058	541
33	12,367.0	5.26	5.93	91,517	542
34	12,964.0	6.17	5.94	90,975	541
35	13,050.0	6.13	5.93	90,434	536
36	12,786.5	6.10	5.93	89,898	532
37	12,791.5	5.55	5.93	89,366	530
38	12,765.0	6.66	5.95	88,836	528
39	12,561.5	5.25	6.01	88,308	531
40	12,223.5	5.73	6.08	87,777	534
41	12,012.5	6.58	6.14	87,243	535
42	11,737.0	6.56	6.22	86,708	539
43	11,845.0	6.50	6.32	86,169	544
44	11,501.5	5.83	6.44	85,625	552
45	10,844.5	7.50	6.61	85,073	563
46	10,046.5	6.07	6.90	84,510	583
47	9,170.0	6.11	7.36	83,927	618
48	8,190.5	9.40	7.97	83,309	665
49	7,655.0	9.27	8.66	82,644	716
50	6,484.5	7.86	9.38	81,928	768
51	5,462.0	10.44	10.07	81,160	818
52	4,629.5	10.37	10.61	80,342	852
53	3,933.5	14.75	11.08	79,490	881
54	3,602.0	11.94	11.63	78,609	932
55	2,731.5	8.05	12.58	77,677	960
56	2,473.5	14.55	14.17	76,717	1,088
57	1,919.5	17.71	16.49	75,629	1,247
58	1,388.5	15.12	19.35	74,382	1,440
59	987.0	21.28	22.36	72,942	1,630
60	668.5	28.42	25.13	71,312	1,792

WOMEN.—Continued.

Age.	Exposures.	Unadjusted Death Rate Per 1000.	Adjusted Death Rate Per 1000.	Living.	Dying.
61	496.0	30.24	27.24	69,520	1,893
62	475.5	35.75	28.65	67,627	1,937
63	449.5	24.47	29.54	65,690	1,940
64	311.0	25.72	30.42	63,750	1,940
65	244.5	32.72	31.72	61,810	1,961
66	146.5	6.83	33.74	59,849	2,019
67	70.0	28.57	36.57	57,830	2,115
68	21.0		40.10	55,715	2,234
69	1.0		44.19	53,481	2,363
70			48.65	51,118	2,488
71	2.0		53.38	48,630	2,596
72			58.38	46,034	2,687
73	1.0		63.78	43,347	2,764
74			69.57	40,583	2,824
75	1.0		75.74	37,759	2,860
76			82.31	34,899	2,872
77			89.30	32,027	2,860
78			96.71	29,167	2,821
79			104.55	26,346	2,754
80			112.83	23,592	2,662
81			121.56	20,930	2,544
82			130.74	18,386	2,404
83			140.39	15,982	2,244
84			150.51	13,738	2,067
85			161.12	11,671	1,881
86			172.24	9,790	1,686
87			183.88	8,104	1,490
88			196.06	6,614	1,297
89			208.79	5,317	1,110
90			222.08	4,207	934
91			235.96	3,273	773
92			250.44	2,500	626
93			276.20	1,874	517
94			309.45	1,357	420
95			348.77	937	327
96			412.92	610	252
97			504.89	358	181
98			634.68	177	112
99			813.56	65	53
100			1,000.00	12	12
	348,228.0				100,000

WOMEN.

Ages.	Actual Deaths.	Expected Deaths by Adjusted.	Plus.	Minus.	Accumulated Error.
18	7	6		1	- 1
19	17	17			- 1
20	19	22	3		+ 2
21	32	27		5	- 3
22	21	30	9		+ 6
23	46	37		9	- 3
24	41	41			- 3
25	53	46		7	-10
26	44	49	5		- 5
27	45	53	8		+ 3
28	61	58		3	0
29	64	62		2	- 2
30	61	65	4		+ 2
31	81	68		13	-11
32	67	70	3		- 8
33	65	73	8		0
34	80	77		3	- 3
35	80	77		3	- 6
36	78	76		2	- 8
37	71	76	5		- 3
38	85	76		9	-12
39	66	76	10		- 2
40	70	74	4		+ 2
41	79	74		5	- 3
42	77	73		4	- 7
43	77	75		2	- 9
44	67	74	7		- 2
45	81	71		10	-12
46	61	69	8		- 4
47	56	67	11		+ 7
48	77	65		12	- 5
49	71	66		5	-10
50	51	61	10		0
51	57	55		2	- 2
52	48	49	1		- 1
53	58	44		14	-15
54	43	42		1	-16
55	22	34	12		- 4
56	36	35		1	- 5
57	34	32		2	- 7
58	21	27	6		- 1
59	21	22	1		0
60	19	17		2	- 2
61	15	14		1	- 3
62	17	14		3	- 6
53	11	13	2		- 4
64	8	9	1		- 3
65	8	8			- 3
66	1	5	4		
67	2	3	1		+ 1
	2,372	2,374	123	121	+ 2

MEN AND WOMEN.

Ages.	Exposures.	Unadjusted Death Rate Per 1000.	Adjusted Death Rate Per 1000.	Living.	Dying.
16	54.5				
17	110.0		4.23	100,000	423
18	2,904.6	1.38	4.21	99,577	418
19	5,490.0	3.46	4.25	99,159	422
20	6,773.0	3.54	4.33	98,737	426
21	7,575.5	5.28	4.44	98,311	436
22	8,163.5	4.53	4.56	97,875	448
23	8,482.5	4.60	4.67	97,427	454
24	9,223.5	4.88	4.71	96,973	457
25	9,335.5	4.82	4.69	96,516	452
26	9,708.0	5.15	4.62	96,064	444
27	10,088.0	4.66	4.53	95,620	432
28	10,612.0	3.96	4.46	95,188	425
29	10,829.0	3.05	4.44	94,763	420
30	10,937.5	5.39	4.50	94,343	425
31	11,362.5	5.10	4.66	93,918	438
32	11,561.0	3.81	4.90	93,480	457
33	11,360.5	5.46	5.19	93,023	483
34	12,004.5	6.00	5.47	92,540	506
35	11,884.0	5.39	5.72	92,034	526
36	11,950.0	6.03	5.90	91,508	540
37	11,934.0	6.20	5.99	90,968	545
38	11,683.5	6.59	6.01	90,423	544
39	11,483.5	6.53	6.02	89,879	540
40	11,253.5	5.42	6.06	89,339	542
41	11,317.5	5.83	6.19	88,797	550
42	11,836.0	5.49	6.46	88,247	569
43	12,024.0	7.49	6.88	87,678	604
44	12,248.5	6.69	7.42	87,074	645
45	11,651.0	8.84	8.03	86,429	694
46	11,134.5	8.17	8.63	85,735	739
47	10,623.0	8.76	9.18	84,996	781
48	9,844.0	11.89	9.65	84,215	812
49	9,346.5	10.81	10.06	83,403	839
50	9,101.0	9.67	10.47	82,564	864
51	8,464.0	9.45	10.98	81,700	897
52	7,819.5	11.77	11.67	80,803	943
53	7,304.5	13.09	12.59	79,860	1,005
54	7,299.0	11.65	13.72	78,855	1,082
55	6,233.5	16.68	14.95	77,773	1,162
56	5,149.0	15.93	16.21	76,611	1,242
57	4,324.5	16.42	17.45	75,369	1,316
58	3,497.0	21.16	18.66	74,053	1,382
59	2,799.5	22.86	20.00	72,671	1,453
60	2,412.0	21.97	21.58	71,218	1,536

MEN AND WOMEN.—Continued.

Age.	Exposures.	Unadjusted Death Rate. Per 1000.	Adjusted Death Rate. Per 1000.	Living.	Dying.
61	2,094.5	20.53	23.57	69,682	1,643
62	1,809.0	21.71	26.11	68,039	1,776
63	1,533.5	26.08	29.35	66,263	1,945
64	1,277.0	39.15	33.34	64,318	2,145
65	894.5	38.01	37.94	62,173	2,359
66	731.5	41.01	42.66	59,814	2,552
67	614.0	47.23	47.11	57,262	2,698
68	555.5	48.61	50.94	54,564	2,779
69	468.5	53.36	54.06	51,785	2,800
70	392.0	68.88	56.74	48,985	2,780
71	316.5	69.51	59.53	46,205	2,751
72	313.5	60.61	62.79	43,454	2,728
73	251.0	47.81	66.74	40,726	2,718
74	212.5	47.06	71.02	38,008	2,699
75	150.5	93.02	75.55	35,309	2,668
76	139.0	107.91	80.46	32,641	2,627
77	114.0	70.18	85.96	30,014	2,579
78	119.0	126.05	92.47	27,435	2,537
79	116.0	77.59	100.89	24,898	2,512
80	64.0	93.75	111.82	22,386	2,504
81	49.0	122.45	125.65	19,882	2,498
82	54.0	111.11	142.34	17,384	2,474
83	40.5	197.53	161.20	14,910	2,403
84	11.5	86.96	181.49	12,507	2,270
85	5.0	600.00	202.16	10,237	2,070
86	1.0	1,000.00	222.33	8,167	1,815
87	5.0		241.80	6,352	1,536
88	3.0		261.11	4,816	1,257
89	1.0		280.86	3,559	1,000
90			301.75	2,559	772
91			323.86	1,787	579
92			346.56	1,208	419
93			368.80	789	291
94			398.00	498	198
95			323.73	300	97
96			359.82	203	73
97			396.76	130	52
98			533.33	78	41
99			581.43	37	22
100			666.67	15	10
101			1,000.00	5	5
	403,528.5				100,000

MEN AND WOMEN.

Ages.	Actual Deaths.	Expected Deaths by Adjusted.	Plus.	Minus.	Accumulated Error.
18	4	12	8		+ 8
19	19	23	4		+12
20	24	29	5		+17
21	40	34		6	+11
22	37	37			+11
23	39	40	1		+12
24	45	43		2	+10
25	45	44		1	+ 9
26	50	45		5	+ 4
27	47	46		1	+ 3
28	42	47	5		+ 8
29	33	48	15		+28
30	59	49		10	+13
31	58	53		5	+ 8
32	44	57	13		+21
33	62	59		3	+18
34	72	66		6	+12
35	64	68	4		+16
36	72	70		2	+14
37	74	71		3	+11
38	77	70		7	+ 4
39	75	69		6	- 2
40	61	68	7		+ 5
41	66	70	4		+ 9
42	65	76	11		+20
43	90	82		8	+12
44	82	91	9		+21
45	103	94		9	+12
46	91	96	5		+17
47	93	97	4		+21
48	117	95		22	- 1
49	101	94		7	- 8
50	88	95	7		- 1
51	80	93	13		+12
52	92	91		1	+11
53	96	92		4	+ 7
54	85	100	15		+22
55	104	93		11	+11
56	82	83	1		+12
57	71	75	4		+16
58	74	65		9	+ 7
59	64	56		8	- 1
60	53	52		1	- 2

MEN AND WOMEN.—Continued.

Ages.	Actual Deaths.	Expected Deaths by Adjusted.	Plus.	Minus.	Accumulated Error.
61	43	49	6		+ 4
62	39	47	8		+12
63	40	45	5		+17
64	50	43		7	+10
65	34	34			+10
66	30	31	1		+11
67	29	29			+11
68	27	28	1		+12
69	25	25			+12
70	27	42		5	+ 7
71	22	19		3	+ 4
72	19	20	1		+ 5
73	12	17	5		+10
74	10	15	5		+15
75	14	11		3	+12
76	15	11		4	+ 8
77	8	10	2		+10
78	15	11		4	+ 6
79	9	12	3		+ 9
80	6	7	1		+10
81	6	6			+10
82	6	8	2		+12
83	8	7		1	+11
84	1	2	1		+12
85	3	1		2	+10
86	1	1			+10
	3,339	3,349	176	166	

DEATH RATES PER 1000.

Age.	MALES AND MIXED LIVES.							FEMALES	
	New English Table.	Scandinavia via n Experience.	Australian Ex- perience.	Canada Life.	Fraternai Cour- geous Table.	American Expe- rience Table.	43 Societies.	Farr's English Table No. 3.	Scandinavia via n Experience.
17	3.75	.....	3.38	.....	.....	7.69	4.64	6.55	.....
18	3.83	.....	3.48	.....	.....	7.73	4.66	7.18	.....
19	3.92	.....	3.49	.....	.....	7.77	4.68	7.86	.....
20	4.04	4.28	3.48	4.63	5.00	7.81	4.71	8.56	4.71
21	4.16	4.27	3.40	4.67	5.04	7.86	4.73	8.79	4.73
22	4.31	4.25	3.44	4.71	5.07	7.91	4.74	9.00	4.77
23	4.46	4.25	3.46	4.75	5.11	7.96	4.71	9.21	4.83
24	4.63	4.25	3.47	4.80	5.15	8.01	4.66	9.41	4.90
25	4.81	4.26	3.54	4.86	5.20	8.07	4.59	9.61	4.99
26	5.00	4.28	3.67	4.92	5.26	8.13	4.52	9.80	5.10
27	5.23	4.32	3.84	4.99	5.32	8.20	4.47	10.00	5.33
28	5.44	4.37	3.94	5.06	5.39	8.26	4.46	10.19	5.35
29	5.69	4.44	4.18	5.14	5.47	8.35	4.50	10.38	5.50
30	5.95	4.53	4.41	5.24	5.55	8.43	4.60	10.57	5.66
31	6.20	4.64	4.71	5.34	5.65	8.51	4.73	10.76	5.82
32	6.48	4.77	4.91	5.45	5.75	8.61	4.89	10.96	6.00
33	6.77	4.92	5.25	5.57	5.87	8.72	5.05	11.16	6.18
34	7.06	5.10	5.49	5.70	6.00	8.83	5.20	11.37	6.37
35	7.38	5.29	5.68	5.85	6.15	8.95	5.33	11.58	6.56
36	7.71	5.52	5.83	6.01	6.31	9.09	5.45	11.80	6.74
37	8.04	5.78	6.09	6.19	6.49	9.23	5.56	12.03	6.93
38	8.38	6.07	6.28	6.39	6.70	9.41	5.70	12.26	7.12
39	8.77	6.39	6.62	6.61	6.92	9.59	5.86	12.51	7.31
40	9.15	6.74	7.02	6.85	7.17	9.79	6.07	12.77	7.49
41	9.56	7.13	7.47	7.12	7.45	10.01	6.33	13.04	7.68
42	10.01	7.56	7.91	7.41	7.77	10.25	6.64	13.32	7.86
43	10.48	8.04	8.38	7.74	8.11	10.52	6.98	13.62	8.05
44	10.99	8.56	8.80	8.09	8.48	10.83	7.37	13.94	8.25
45	11.53	9.13	9.20	8.48	8.87	11.16	7.79	14.27	8.46
46	12.13	9.75	9.59	8.92	9.29	11.56	8.24	14.62	8.69
47	12.77	10.43	10.06	9.40	9.75	12.00	8.73	14.98	8.94
48	13.45	11.17	10.55	9.92	10.27	12.51	9.28	15.37	9.22
49	14.22	11.98	11.03	10.50	10.82	13.11	9.92	15.78	9.55
50	15.04	12.87	11.50	11.14	11.44	13.78	10.67	16.21	9.92
51	15.95	13.84	12.08	11.85	12.15	14.54	11.55	16.66	10.35
52	16.93	14.89	12.54	12.63	12.90	15.39	12.59	17.14	10.86
53	17.99	16.04	12.99	13.48	13.75	16.33	13.80	17.64	11.44
54	19.18	17.30	13.58	14.43	14.68	17.40	15.17	19.67	12.13
55	20.54	18.67	14.28	15.47	15.71	18.57	16.71	20.98	12.92
56	21.84	20.16	15.15	16.61	16.86	19.89	18.39	22.34	13.94
57	23.38	21.79	16.16	17.87	18.12	21.34	20.18	23.79	14.90
58	25.05	23.56	17.36	19.26	19.50	22.94	22.07	25.34	16.12
59	26.89	25.50	18.63	20.79	21.05	24.72	24.07	27.02	17.50
60	28.87	27.60	19.94	22.48	22.75	26.69	26.21	28.85	19.08
61	31.05	29.90	21.47	24.34	24.64	28.89	28.53	30.86	20.86
62	33.44	32.40	23.31	26.38	26.72	31.29	31.06	33.07	22.86

DEATH RATE PER 1000.—Continued.

Age.	MALES							FEMALES	
	New English Table.	Scandinavia via Experience.	Australian Experience.	Canada Life.	Fraternal Congress Table.	American Experience Table.	43 Societies.	Farr's English Table No. 3.	Scandinavia via Experience.
63	36.03	35.13	26.07	28.63	29.03	33.94	33.88	35.50	25.09
64	38.86	38.10	29.37	31.10	31.57	36.87	37.00	38.18	27.58
65	41.96	41.33	33.40	33.82	34.39	40.13	40.40	41.12	30.34
66	45.32	44.84	37.23	36.81	37.52	43.71	43.99	44.35	33.38
67	49.00	48.66	42.13	40.10	40.96	47.65	47.70	47.90	36.72
68	52.99	51.81	44.67	43.71	44.78	52.00	51.54	51.77	40.37
69	57.35	57.32	47.31	47.68	48.98	56.76	55.76	55.99	44.35
70	62.07	62.22	50.06	52.04	53.65	61.99	60.85	60.59	48.67
71	67.23	67.52	53.38	56.83	58.81	67.67	67.22	65.56	53.34
72	72.81	73.27	53.04	62.07	64.49	73.73	75.12	70.95	58.36
73	78.92	79.50	57.82	67.83	70.81	80.18	84.07	76.75	63.76
74	85.48	86.23	63.14	74.13	77.78	87.03	93.55	82.98	69.55
75	92.64	93.51	66.33	81.04	85.48	94.37	102.55	89.67	75.72
76	100.43	101.37	72.15	88.60	93.99	102.31	110.28	96.81	82.30
77	108.82	109.85	87.34	96.86	103.40	111.06	115.98	104.43	89.29
78	117.95	118.97	100.16	105.89	113.84	120.83	120.26	112.53	96.70
79	127.82	128.79	114.31	115.73	125.35	131.73	123.62	121.11	104.54
80	138.44	139.34	136.31	126.47	138.09	144.47	127.68	130.19	112.82
81	150.00	150.66	158.20	138.16	152.20	158.61	133.48	139.77	121.55
82	162.40	162.78	172.21	150.87	167.77	174.30	142.65	149.85	130.73
83	175.73	175.75	187.25	164.68	184.96	191.56	155.47	160.44	140.38
84	190.14	189.60	202.98	179.64	204.04	211.36	172.11	171.53	150.50
85	205.69	204.35	212.21	195.83	225.08	235.55	191.00	183.12	161.12
86	222.13	220.05	219.76	213.32	248.35	265.68	211.55	195.20	172.24
87	240.01	236.72	231.99	232.17	274.15	303.02	232.48	207.77	183.87
88	258.87	254.38	246.61	252.43	302.57	346.69	253.40	220.81	196.04
89	278.81	273.05	262.89	274.16	334.18	395.86	273.76	234.33	208.76
90	300.75	292.73	283.02	297.39	368.79	454.55	294.17	248.30	222.04
91	322.58	313.43	312.58	322.15	407.67	532.47	314.72	262.71	235.90
92	347.88	335.14	352.94	348.45	449.75	634.26	335.96	277.54	250.37
93	371.20	357.85	406.93	376.27	498.45	734.18	357.74	292.78	265.46
94	400.00	381.52	484.19	405.58	549.38	857.14	380.02	308.40	281.18
95	424.73	406.12	608.49	436.31	602.74	1000.00	404.33	324.37	297.57
96	457.94	431.60	867.47	468.37	655.17	.....	431.47	340.69	314.63
97	482.76	457.88	1000.00	501.61	700.00	.....	462.18	357.31	332.38
98	500.00	484.88	.....	535.87	1000.00	.....	495.12	374.21	350.83
99	533.33	512.51	.....	570.93	.....	.....	531.29	391.36	369.99
100	571.43	540.64	.....	606.53	.....	.....	581.73	408.74	389.87
101	666.67	.....	.....	642.38	.....	.....	666.67	426.30	.....
102	1000.00	.....	.....	1000.00	.....	.....	1000.00	444.02	.....
103	.....	.....	.....	.....	.....	.....	.....	461.86	.....
104	.....	.....	.....	.....	.....	.....	.....	479.79	.....
105	.....	.....	.....	.....	.....	.....	.....	497.78	.....
106	.....	.....	.....	.....	.....	.....	.....	515.78	.....
107	.....	.....	.....	.....	.....	.....	.....	533.76	.....
108	.....	.....	.....	.....	.....	.....	.....	551.69	.....

APPLICATION OF ACTUARIAL PRINCIPLES.

Within the last ten years the fraternal beneficiary societies generally have followed actuarial advice in making readjustments, where the management could control the situation. Many times expert assistance was received by the executives and rejected by the representatives of the members. Sometimes officials have gotten "cold feet," in view of possible defeat for reelection and forgot the actuary and his advice.

But the general situation is very encouraging, and it is a personal satisfaction to testify to the earnest solicitude of fraternal officials for solvency and permanency of their societies.

To this end the employment of actuaries is the rule, rather than the exception, and it is pleasant to note that where there was one available ten years ago, now there are a score or more offering their services as experts.

If the rate of mortality were uniform at all periods of life, fraternal society finances would be a very simple matter, and the original equal levy plan would suffice for the perpetuation of the organizations.

However, the rate of mortality increases with the age of the individual, and therefore, to have a level contribution rate, with a uniform number of assessments each year, it is necessary to charge more than sufficient to meet the current death claims in the early years and accumulate the excess of contributions against the period when the annual claims will, by reason of increasing age, exceed the annual contribution.

To fix the contribution at a rate which will be adequate to provide for future claims matured from year to year to the end of the longest life, without making the rate prohibitive, it is necessary to take advantage of interest increment.

In Exhibit I, demonstrating the method of computing level contribution rates, it was shown that \$92,215,000 of claims, maturing year to year from entry age 35 to the limiting age of 99, could be provided for with a present sum at age 35 of \$27,818,663.44 improved at 4 per cent interest compounded annually. In other words, the single contribution as a principal sum would provide for \$27,818,663.44 and the interest would provide for \$64,396,336.56 of the total of \$92,215,000 in claims—more than two-thirds paid from interest earning on the principal, after paying the yearly instalments of claims.

As elsewhere shown, without the aid of interest, it would require an average annual contribution of \$29.11, while with the 4 per cent interest increment, the annual level contribution is \$16.62 at age of entry, 35.

The effect of interest is not so marked in connection with the annual as with the single premium, because of the larger principal to be improved in the latter case.

The fact to be impressed is that, without the interest factor level contribution rates would be unnecessarily heavy. To introduce this factor involves a second complication to that of dealing with the increasing cost of insurance by virtue of increasing age.

It is a common sense observation to assert that it requires some one especially qualified to compute and apply adequate and satisfactory rates of contribution.

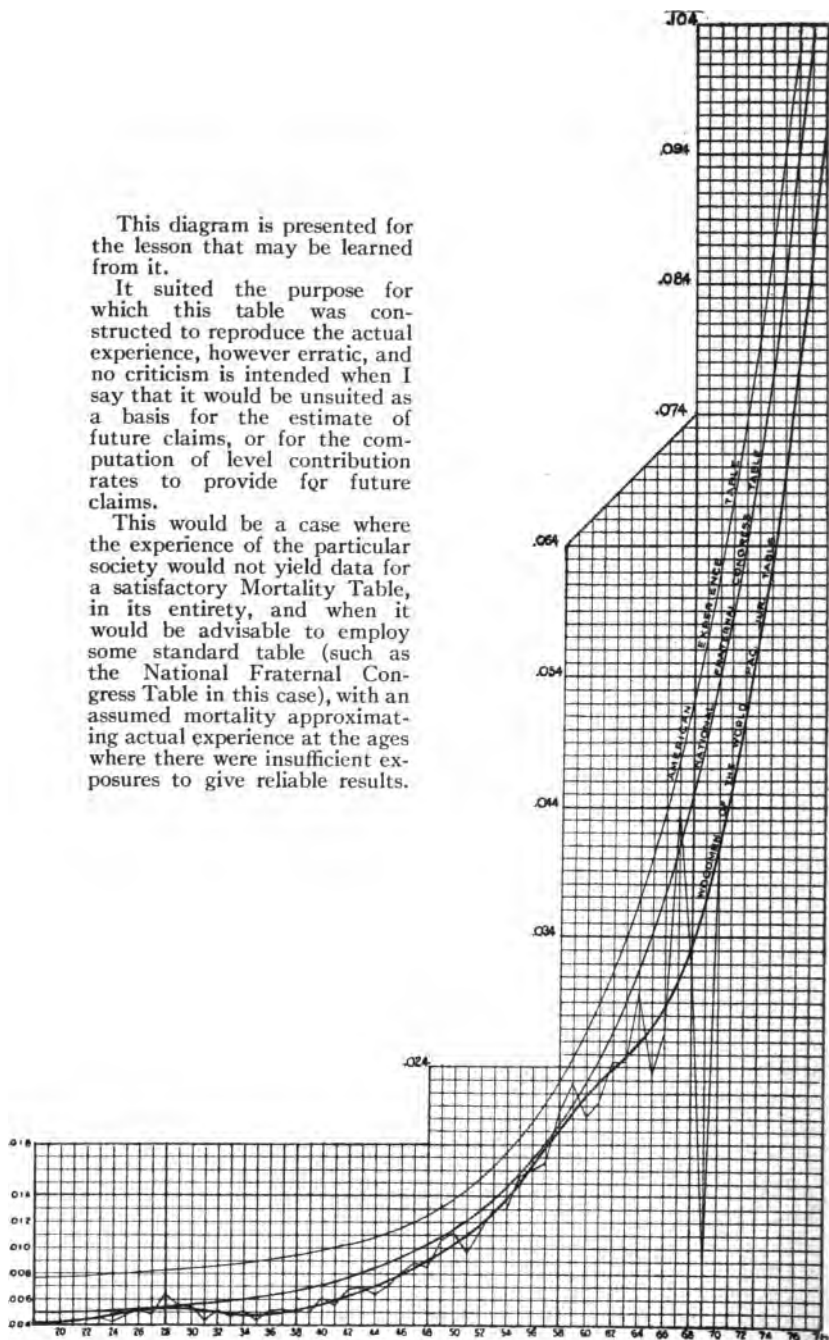
I have repeatedly remarked that before there can be any application of actuarial principles, and before computations can be commenced, there must be an estimate of the amount of yearly instalments of claims that will in the future be made by the members upon the funds.

The only basis for such an estimate is past experience, either of the society in question or of other societies similarly situated, or similarly constituted to the particular society for which a scale of rates is desired.

This diagram is presented for the lesson that may be learned from it.

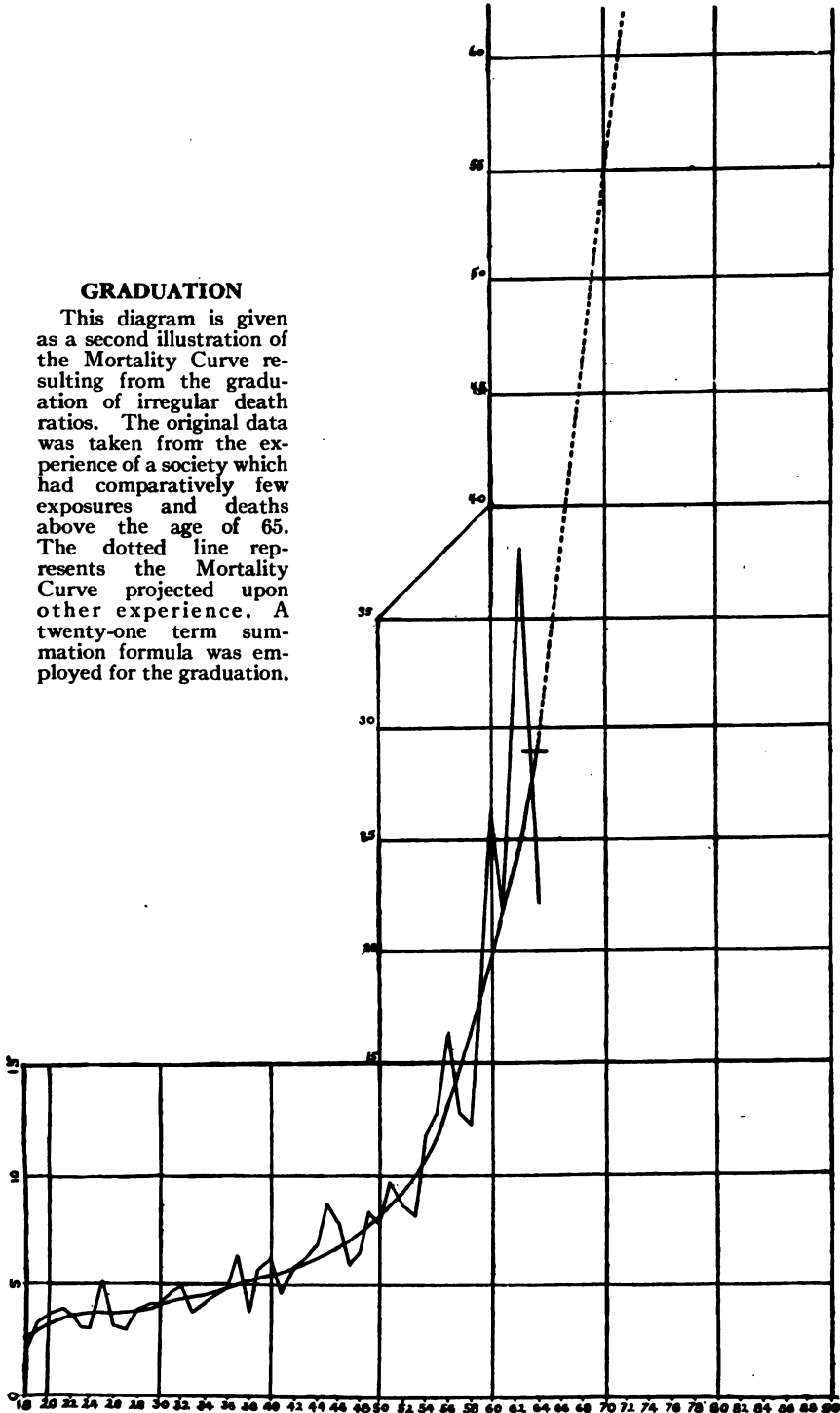
It suited the purpose for which this table was constructed to reproduce the actual experience, however erratic, and no criticism is intended when I say that it would be unsuited as a basis for the estimate of future claims, or for the computation of level contribution rates to provide for future claims.

This would be a case where the experience of the particular society would not yield data for a satisfactory Mortality Table, in its entirety, and when it would be advisable to employ some standard table (such as the National Fraternal Congress Table in this case), with an assumed mortality approximating actual experience at the ages where there were insufficient exposures to give reliable results.



GRADUATION

This diagram is given as a second illustration of the Mortality Curve resulting from the graduation of irregular death ratios. The original data was taken from the experience of a society which had comparatively few exposures and deaths above the age of 65. The dotted line represents the Mortality Curve projected upon other experience. A twenty-one term summation formula was employed for the graduation.



THE MORTALITY TABLE.

The construction of a mortality table from original data should always be entrusted to a competent actuary.

It is not the present purpose to go into detail concerning the preparation of the data and their subsequent treatment.

In 1906 I made a report to the Committee on Statistics and Good of the Orders of the National Fraternal Congress, and I have reproduced the Committee's report to the Congress, which contains eight separate mortality tables, four of them unadjusted and four graded. The tests of the graduations are also given.

It would fill a book to enter into an explanation of the proper method of transcribing the data from the records, and of their treatment before the unadjusted tables can be secured, and the graduation so as to correctly reflect the actual mortality experience.

I content myself with a reference to the report to the National Fraternal Congress in 1906, and with a diagram showing the mortality curves of the American Experience and National Fraternal Congress Mortality Tables, together with a graphic representation of the unadjusted and adjusted Mortality Tables, according to the experience of the Pacific Jurisdiction of the Woodmen of the World.

I had nothing to do with the graduation of the unadjusted ratios, and present the diagram because of the unusual character of the mortality curve. Ordinarily a reliable experience would produce a curve similar to that of the American Experience Table or the National Fraternal Congress Table.

The purpose of a graduation is to smooth out the irregularities of the original ratios, and to do this the line representing the graduation should cut the irregular line, representing the unadjusted ratios, so that equal parts should be presented above and below the graphically illustrated mortality curve. The graduation of the W. O. W. Pacific Jurisdiction experience appears to follow this rule, and yet the falling away from the Congress Table after age 64 would indicate a paucity of exposures and an unreliable experience at the advanced ages. The violent fluctuations from very high to very low death rates at ages 66 to 70 bear out the assumption of unreliability of the experience at the advanced ages.

EXPLANATION OF COMMUTATION COLUMNS.

The following comprehensive explanation was prepared by Dr. George E. West, for the 1902 edition of "Life Insurance Premiums—How Computed, Tested, and Valued." I reproduce it in memory of a dear friend, and for the reason that it is unequalled as a brief and lucid exposition of a technical subject. Later on I attempt to give a more extended, if not a plainer, discussion of commutation columns and the arithmetical process of computing contribution rates:

The methods of obtaining the data from which a mortality table is constructed are so well understood that a description thereof would probably be superfluous. The actual graduation of a table is too technical a process for popular exposition. It may be best, therefore, to take the table for granted, and to confine our attention to a description of its main features, and an explanation of a few of its principal uses. It is advisable to premise that a mortality table does not represent any society—past, present, or future—for which reason averages of the ratios at various ages are of no practical utility. What it does represent is the average mortality experience of a certain number of individuals taken at the initial age and kept under observation during their respective lives. Any age subsequent to the first may be made the initial age by cutting out the preceding portion of the table.

The first column of the table contains in serial order the years of age from the earliest selected to the assumed limit of human life. The second column, designated

by the letter "l," the initial of the word "living," contains the survivors at each attained age of the original entrants, the number of which latter, known as the *radix* of the table, being placed opposite the initial age. The survivors, at any particular age, are indicated by the column symbol with the appropriate suffix; thus, l_{20} , l_{30} , l_{40} , express the numbers surviving at ages 20, 30, and 40, respectively. When a general symbol is desired, it is customary to employ l_x , in which x may have every value successively in the age column.

Next to the "l" is usually placed the "d" column, "d" being the initial letter of the word "dying." As before, suffixes are employed to secure definiteness; thus, d_{20} indicates the tabular number dying between ages 20 and 21. The general symbol is d_x . It is obvious that—

$$l_{20} - d_{20} = l_{21}, \text{ whence } d_{20} = l_{20} - l_{21}. \text{ Generally, } d_x = l_x - l_{x+1}.$$

The initial letter of the word "probability," "p," heads the column showing the probability of living at least one year at each age. The probability of surviving from age 20 to age 21 is expressed by p_{20} ; the general symbol is p_x . As of l_x persons who attain age x , l_{x+1} will survive to age $x+1$, it is evident that—

$$p_x = l_{x+1} \div l_x.$$

The probability of dying within a year at any age is indicated by the letter "q," the initial of the word "quotient," suffixes being employed for the usual purpose. Of l_x persons living at age x , d_x die within a year; therefore—

$$q_x = \frac{d_x}{l_x} = \frac{l_x - l_{x+1}}{l_x} = 1 - \frac{l_{x+1}}{l_x} = 1 - p_x.$$

This relation may be otherwise obtained. Certainty is designated by 1, and it is certain that a person will either survive or perish during the year; hence—

$$p_x + q_x = 1, \text{ or } q_x = 1 - p_x, \text{ as before.}$$

The respective probabilities of surviving and dying during the second year are denoted by the symbols ${}_2p_x$ and ${}_2q_x$, and, generally, during the n th year, by ${}_np_x$ and ${}_nq_x$. It is evident that—

$${}_2p_x = p_x p_{x+1},$$

$$\text{that } {}_3p_x = {}_2p_x p_{x+2} = p_x p_{x+1} p_{x+2},$$

$$\text{and, generally, that } {}_np_x = p_x p_{x+1} \dots p_{x+n-1}.$$

$$\text{Similarly, } {}_2q_x = p_x q_{x+1}, {}_3q_x = {}_2p_x q_{x+2} = p_x p_{x+1} q_{x+2},$$

$$\text{and, generally, } {}_nq_x = p_x p_{x+1} \dots p_{x+n-2} q_{x+n-1}.$$

$$\text{Therefore, } {}_np_x + {}_nq_x = (p_{x+n-1} + q_{x+n-1} = 1)(p_x p_{x+1} \dots p_{x+n-2}) = {}_{n-1}p_x.$$

The present value of a dollar, due one year hence, is denoted by the letter "v," the initial of the word "value;" v^2 represents the value of a dollar due two years hence, and, generally, v^x symbolizes the value of a dollar due x years hence.

In insurance calculations it is commonly assumed that premiums are payable annually in advance, and claims at the end of the year. Starting at age x , each member exposes the society during the first year to a risk of q_x . As claims are not

payable till the end of the year, the value of the risk at the beginning is $vq_x = \frac{vd_x}{l_x}$. During the second year the risk is ${}_2q_x$, and its value is—

$$v^2 {}_2q_x = v^2 p_x q_{x+1} = v^2 \frac{l_{x+1}}{l_x} \times \frac{d_{x+1}}{l_{x+1}} = \frac{v^2 d_{x+1}}{l_x}.$$

Similarly, the risk during the n th year is ${}_nq_x$, and its value is—

$$v^n {}_nq_x = \frac{v^n d_{x+n-1}}{l_x}$$

The value of the combined risk for any number of years is, therefore—

$$vq_x + v^2 {}_2q_x + v^3 {}_3q_x + \dots + v^n {}_nq_x = \frac{vd_x + v^2 d_{x+1} + v^3 d_{x+2} + \dots + v^n d_{x+n-1}}{l_x}$$

If in this formula n is given such a value that $x+n-1$ becomes the last age in the mortality table, the complete expression gives the value of an insurance of one dollar for the whole of life, the symbol for which is A_x . For convenience only, it is customary to multiply both numerator and denominator of the fraction by v^x , so that we have—

$$A_x = \frac{v^{x+1} d_x + v^{x+2} d_{x+1} + \dots + v^{x+n} d_{x+n-1}}{v^x l_x}$$

From inspection, it is evident that every term in the numerator of the second member of this equation is of the same form—that is, by giving x successive values from x to $x+n-1$, we get the successive terms. If then, we write $v^{x+1} d_x = C_x$, $v^{x+2} d_{x+1}$ will equal C_{x+1} , etc., whence—

$$A_x = \frac{C_x + C_{x+1} + C_{x+2} + \dots + C_{x+n-1}}{v^x l_x}$$

If, now, we sum C_x , beginning at the highest age, and write the result, M_x , the equation becomes $A_x = \frac{M_x}{v^x l_x}$. A_x is the net single premium for a whole life assurance of one dollar, issued at age x .

As annual premiums are payable in advance, the first is certain and immediate, and hence has the full value, viz., P_x . The probability that the second will be paid is p_x , and the time of payment is one year hence; therefore, the value of the premium is—

$$P_x v p_x = P_x v \cdot \frac{l_{x+1}}{l_x}$$

The value of the third premium is—

$$P_x v^2 {}_2p_x = P_x v^2 \frac{l_{x+1}}{l_x} \times \frac{l_{x+2}}{l_{x+1}} = P_x v^2 \frac{l_{x+2}}{l_x}$$

Similarly, the value of the n th premium is—

$$P_x v^{n-1} {}_{n-1}p_x = P_x v^{n-1} \frac{l_{x+n-1}}{l_x}$$

The value of the entire series of premiums is, obviously—

$$P_x \left(1 + \frac{v l_{x+1}}{l_x} + \frac{v^2 l_{x+2}}{l_x} + \dots + \frac{v^{n-1} l_{x+n-1}}{l_x} \right) = \frac{P_x (l_x + v l_{x+1} + v^2 l_{x+2} + \dots + v^{n-1} l_{x+n-1})}{l_x}$$

Multiplying both numerator and denominator by v^x the expression becomes—

$$P_x \frac{v^x l_x + v^{x+1} l_{x+1} + v^{x+2} l_{x+2} + \dots + v^{x+n-1} l_{x+n-1}}{v^x l_x}$$

If n be given such a value as to make $x+n-1$ the last age in the mortality table, the formula expresses the combined value of the premiums payable during life. From an inspection of the numerator of the fraction, it is evident that the successive terms are alike as to form, so that each can be formed from the preceding one by an increase of one in the value of x . If then, we write $v^x l_x = D_x$, the formula becomes—

$$P_x \frac{D_x + D_{x+1} + D_{x+2} + \dots + D_{x+n-1}}{D_x}$$

Summing D_x , beginning at the highest age, and writing the result as N_x , the combined value of the premiums may be expressed as—

$$P_x \frac{N_x}{D_x}$$

This must be equal to the value of the assurance which has already been found to be $\frac{M_x}{v^x l_x}$ or $\frac{M_x}{D_x}$. Writing—

$$P_x \frac{N_x}{D_x} = \frac{M_x}{D_x},$$

it follows that—

$$P_x = \frac{M_x}{N_x}$$

As P_x is payable yearly during life, it is similar to a life annuity, of which the first payment is due. Therefore, the value of a life annuity due of P_x is $P_x \frac{N_x}{D_x}$, whence the value of a like annuity of one dollar is equal to $\frac{N_x}{D_x}$. This value is denoted by a_x .

Immediately after the first payment of an annuity due, it becomes an ordinary or immediate annuity, of which the first payment will be due a year hence. Expressing this value by a_x , it follows that—

$$a_x = a_x - 1.$$

It is customary in England to arrange the commutation columns so as to facilitate the calculation of a_x . In other words, N_x is the summation of D_{x+1} , so that $a_x = \frac{N_x}{D_x}$, whereas by the American form of table, $a_x = \frac{N_{x+1}}{D_x}$.

The calculation of varying annuities, assurances, and premiums is much facilitated by summations of the M and N columns, producing the R and S columns, respectively. Of the six columns heretofore described, the usefulness is by no means equal. Although C is the basis of M, it is almost never directly involved in computations, and is, consequently, seldom tabulated. On the other hand, the use of S is limited to a class of obligations with which fraternal orders are not concerned. Orders which scale certificates for a number of years are about the only ones requiring the R column. There remain, then, three columns, D, N, and M, which may be regarded as indispensable.

As already shown—

$$\begin{aligned} \text{whence—} & \quad v^{x+1} d_x = v^{x+1} (l_x - l_{x+1}) = v \cdot v^x l_x - v^{x+1} l_{x+1}, \\ \text{or—} & \quad C_x = v D_x - D_{x+1}. \\ \text{Similarly—} & \quad C_{x+1} = v D_{x+1} - D_{x+2}, \text{ etc.} \end{aligned}$$

Hence, by summation—

$$M_x = v N_x - N_{x+1}.$$

Summing once more, it is obvious that—

$$R_x = v S_x - S_{x+1}.$$

These formulas are useful for verification purposes.

THE INSURANCE CONTRACT.

All of the preceding matter is of a general character. At length I have told about the history of different kinds of Insurance Organizations, and of the legislation enacted for their regulation, and of what men in their management have said about them and their objects, and of the immense sums represented by their promises to pay benefits upon the occurrence of stated events.

However, in the last analysis the question of insurance is narrowed to the contract between the corporation and the individual.

The billions of dollars involved in the promises to pay benefits are made up of millions of individual undertakings, and to have a comprehensive idea of the whole we must be informed concerning the individual agreement.

The Insurance Contracts of Companies, of Associations, and of Societies, with very few exceptions, have developed into *an affair of business*, whereby the party of the first part, known as the *insurer*, promises to pay certain sums upon the happening of a designated event, such as death or disability, or upon the termination of a stated period or on the attaining of a given age or prior to termination by expiry. The party of the second part, known as the *insured*, in consideration of the promised benefit, agrees to make periodical contributions during the term of insurance, or for a limited period, or until the maturity of the contract by death, disability, or otherwise, or until its expiration.

In the contract of the life company the amount of the benefit and the amount of the contribution are definitely stated.

In the latest form of contract of the Fraternal Beneficiary Society the amount of the benefit is definitely stated, but in the great majority of certificates now outstanding the maximum amount only is definitely fixed. In all cases the contribution is subject to change.

The relations between the parties to the contracts, or policies, issued by the life companies, have been established by law and by judicial decisions. The company must pay the amount promised when it matures under the provisions of the contract, and it must account to the policy-holder for unused contributions (with increment) should he decide to withdraw from the agreement before maturity of the promise.

The relations between the parties to the Fraternal Beneficiary Society contract are unsettled. Generally the statement is correct that the society must pay the amount promised when it matures. In many instances the amount to be paid is limited to the proceeds of one assessment. In only a few cases must the society account to the withdrawing member for any excess of contributions over cost of protection.

The contract of the life insurance company is scientifically constructed so that upon execution, the promise by the first party to pay benefit has a present worth equal to the promise by the second party to make periodical contributions.

The same equitable conditions now obtain in the contracts of many Fraternal Beneficiary Societies; but under the majority of outstanding certificates the original promise was made and the contract entered into without any appreciation of the necessity and without any idea of the equity of requiring contributions with a present value equivalent to that of the benefit promised.

This condition is due to the fact that the Fraternal Society contract was not considered as *an affair of business*.

The conception of the transaction was that the members would always make voluntary contributions to pay death benefits, and that the certificates held by themselves were not "Insurance Contracts," but merely evidences of membership and fraternal cooperation.

The same persons, who carried policies in a life company and held certificates in a fraternal beneficiary society, would accept the former on a business basis of making adequate contributions in consideration of the benefits promised by the life company, and ignore entirely a similar obligation to the fraternal society, notwithstanding the expectation of equal money returns in the way of insurance benefits.

From what has hereinbefore been given concerning the history of Fraternal Beneficiary Societies, it is not strange that the first development of the certificate of membership into a business contract was on the *benefit side*.

The members very naturally preferred to maintain the voluntary principle as applied to contributions because it directly affected themselves, and they desired to maintain volition unrestrained by mathematical formula or business demands.

Since the benefits were intended for the relief or the support of themselves or their dependants, and since they realized the necessity for certainty in such relief or support, very naturally they hesitated not at all in asserting a vested right in and to the promised benefits.

This development changed the view of members to look upon their certificates as *Contracts* and to depend upon their enforcement for relief to their dependants or to themselves.

The members of the Societies have not failed to make demands for benefits, but they have neither taken the trouble nor the time to carefully consider the relation of these demands to the contributions required from them to make possible the payment of the benefits.

After many years of study and practical experience in connection with the affairs of Fraternal Beneficiary Societies, it is my conclusion that indifference of members to the importance of perpetuating these great provident institutions is the reason for their tendency toward paying as little and getting as much as possible in their dealing with the Societies.

They strenuously oppose the proposition that the requirement for stated and adequate contributions is a contractual business obligation.

Nevertheless, valuation laws and business necessities are impressing and bringing home the fact that the *contribution side* to the Fraternal Beneficiary Society contract is a *business affair*, and the party of the second part, *the insured*, must be held accountable as having assumed a business obligation.

EQUIVALENT PROMISES.

The question is, What constitutes a safe and equitable insurance contract?

Its equity consists in starting the *insurer* and *insured* on even terms, without discrimination against or favor to members, *when the value of the promised benefit is no more nor less than the value of the promised contributions.*

Its safety consists in collecting an income and conserving an accumulation sufficient to provide for the payment of promised benefits as they mature into claims.

The Fraternal Beneficiary Society, the mutual, cooperative association of individuals, has no capital stock, and therefore its income and accumulation must be derived from the contributions of its members—treating the interest earned on accumulation as an incident of excess contributions.

When a person joins such an association, the consideration of its promise to pay a benefit is the promise of the individual to make contributions.

It is obvious that the value of the promised contributions, at the inception of the contract, must be equal to the value of the promised benefits, otherwise the association could never have sufficient income to discharge its assumed liabilities—having no primary resources other than the contributions from its members.

If the association is to be a successful insurance organization, it must enter into contract with each member, from first to last, upon a condition of equivalence in values of benefits and contributions. The failure to exact this condition has caused all the trouble in regard to the fulfillment of promises, and has brought about the necessity for readjustments.

The reason for the failure to demand contributions equal in value to that of the benefits promised was the inability of the organizers of Fraternal Beneficiary Societies to determine the proper rates of contribution.

It was easy enough to state the amount of benefit to be granted.

To know the contribution that would certainly provide for the promised benefit required information not possessed by the organizers, and hence they adopted the method of fixing an arbitrary rate of assessment.

ASSESSMENTS-AS-NEEDED.

This device of levying assessments-as-needed avoided the necessity of establishing, in advance, any equivalent relation between benefits and contributions. The latter were left to be determined by the claims for benefits.

Well-known and repeated experiences have thoroughly established the fallacy of the assessment-as-needed plan of contribution. It requires from ten to thirty years to demonstrate its fallacy by actual experience, and for that reason it has been a deceptive plan which has led many organizations to ruin.

Members satisfy themselves with the plausible argument that the plan has sufficed to provide for claims during one period of twenty years. They ignore the fact that age distribution and death rates are very different in the second from the first period, and other conditions are so different that the plan which will serve in the first will not answer in the second.

But it is not here necessary to discuss discredited plans. No valuation is applicable to the assessment-as-needed plan of contribution. The fact that the representatives of American Fraternal Societies have joined in an endorsement of the proposed Uniform Bill, which demands general valuation, placed the official stamp of disapproval and discredit upon that plan. The officials of societies still employing it are emphatic and vigorous in condemning it as a fallacy and a worn-out expedient.

The assessment-as-needed plan must not be confused with that of "uniform contributions for all ages of entry" as practiced by English Friendly Societies.

METHOD OF COMPUTING RATES.

It is not in criticism of societies that reference is made to their crude method of levying contributions. They were intent upon doing good for their fellowmen, and their object was to give them the benefit of insurance protection at actual cost, without any element of profit. To accomplish this, they believed it necessary to steer as far as possible from business methods. Whatever the defects in their plan of contributions, they established organizations which have paid to widows and orphans hundreds of millions of dollars.

The purpose of those now concerned about the future solvency of these societies is to correct past errors and thus assure the payment of the 8,000 millions of dollars in outstanding promises to pay benefits, and to enable them to continue indefinitely the undertaking of billions of promises with certainty of performance.

Getting down to the undisputed facts in the case, if 8,000 millions of dollars of present promised benefits are to be paid, then 8,000 millions of dollars must be raised and made ready for the benefit claims as they are presented for payment. Likewise the billions of future protection must be provided for by billions in contributions and interest earnings.

In other words, the members themselves must provide for their beneficiaries, and the life insurance device is not to relieve them from that responsibility, but merely to distribute and equalize the total burden through cooperative effort.

LAW OF MORTALITY.

Life insurance is not a gambling scheme, but a tried and tested business arrangement based upon contingencies which can be reduced by scientific treatment to mathematical accuracy.

These contingencies are the probabilities of living and dying.

The living make the contributions. The dying mature the claims.

The contributions provide for the claims.

Obviously, the aggregate contributions (and increment) must equal the aggregate claims.

The original promoters of Fraternal Beneficiary Societies understood these last four propositions, when they adopted the device of levying assessments as needed. Unfortunately they neglected to reckon with the inexorable Law of Mortality, and this neglect condemned their plan to failure.

All of us, even children, understand the effect of the Law of Mortality, though few know anything about its application to the life insurance business.

For example, any one would answer that more persons at age 60 than at age 30 would die within one year out of 1,000 persons at each age.

Any one would answer that there is a limit to life—that men cannot live always.

These are the effects of the Law of Mortality, namely:

1. More members, amongst a given number, die at advanced than at younger ages.
2. There is a limit to human life.

Life insurance is the business of accepting risks on human life, with the promise to pay benefits in the event of death.

To properly conduct the business of life insurance requires a knowledge of the duration of human life and of the probable number of deaths to be expected every month or every year.

The necessity for this knowledge is to enable the insurance manager to levy contributions sufficient to provide for the claims expected to mature by death.

The practical way to gain this knowledge is to make investigation of some mortality experience.

DEATH RATE.

Numerous investigations have been made, and it has been found that, on the average, about five persons die within one year, taking 1,000 at age 20. About seven die out of every 1,000 in one year from age 40 to 41. At 50 about eleven, at 60 about twenty-three, at 70 about fifty-four, at 80 about one hundred and thirty-eight, and at 85 about two hundred and twenty-five die out of each 1,000 within one year. Ultimately every person must die.

When applied to life insurance, these vital statistics mean that if a society insured 1,000 persons at age 20 it could expect, within one year, to pay five death claims. If there were 1,000 insured at age 40, seven death claims could be expected within one year. At age 50, eleven claims. At 60, twenty-three claims. At 70, fifty-four claims. At 80, one hundred thirty-eight claims. At 85, two hundred twenty-five claims. At age 99 (if 1,000 arrive at that age), one thousand claims might be expected within the year. So few would survive a century of life that all might be expected to die before attaining 100 years of age.

With a knowledge of the probable deaths to occur within a given period out of a given number exposed to death, mortality ratios can be determined by dividing the number of deaths by the number exposed to death.

If 1,000 are exposed and five die, the mortality ratio, or *death rate*, is .005. If fifty-four die out of 1,000, the *death rate* is .054.

These ratios are known as "death rates," or "probabilities of dying."

The probability of a man dying within one year at age 20 is expressed by the decimal .005 and at age 70 by .054 and at age 85 by .225. These decimals are the quotients of the number *expected* to die divided by the number *exposed* to death, according to the National Fraternal Congress Table of Mortality.

If an investigation be made of the mortality experience of any particular society, the *actual* number of deaths occurring within one year can be definitely ascertained, and by simple division the *actual death rates or probabilities of dying* can be determined.

For example, a certain Society, for one year had an average membership of 2,939 at age 20, and during the year there were 14 deaths. Dividing 14 by 2,939 the mortality ratio of .00476 is obtained.

That is to say, the Society experienced for the year at age 20 a death rate of 4.76 per 1,000 members exposed to death.

The *probability of dying* of one of the 2,939 members was .00476.

At age 70 it had 410 members *exposed*, amongst whom 25 died, making a death rate of nearly 61 per 1,000. The *probability of dying* of one of the 410 members was .060975.

If the Society mentioned had insured each of the 2,939 members at age 20 for \$1,000, and 14 of them died in one year, obviously the Society would have been called upon to pay \$14,000. To be able to discharge its liability it would have been necessary to have collected \$4.76 from each of the 2,939 members.

If the Society had insured each of the 410 members at age 70 for \$1,000, and 25 of them died in one year, there would have been 25 death claims amounting to \$25,000, requiring \$60.98 in contributions from each of them to provide for these claims.

In the case of the 2,939 members, each insured for \$1,000 the total insurance at *risk* would be \$2,939,000, and there being \$14,000 of claims, the latter amount would represent one year's *cost* to the Society in assuming liability for \$2,939,000 of protection on members at age 20.

In the case of the 410 members at age 70, there would be only \$410,000 insurance at *risk*; but the year's *cost* to the Society would be \$25,000.

The \$14,000 and \$25,000 likewise would represent *the value of the benefits* promised to members at ages 20 and 70, while the \$14,000 and \$25,000 contributed by the members would represent *the value of the contributions*.

With less than one-seventh of the protection the amount of the claims incurred was nearly double for the members at age 70, compared with those at 20.

On the average, it costs a society from ten to twelve times more to insure members for one year at age 70 than at age 20.

The insurance business is like any other kind of business; it will become insolvent if *cost* is not obtained for what is sold.

Unless the Society received at least \$4.76 from each of the 2,939 members at age 20, it could not pay \$14,000 in claims. Similarly, \$60.98 was the necessary contribution from each of the 410 members to enable the Society to pay \$25,000 in claims incurred on account of the \$410,000 of protection granted to them for one year.

DISTRIBUTION OF COSTS.

In other words, the Society must obtain contributions from its members sufficient to provide for the *cost* of protection granted.

Of course, this fact is now, and always has been, known to managers of Fraternal Beneficiary Societies.

The trouble with them has been in the *distribution* of the *costs*.

For example, some of them made an equal levy upon all members regardless of age. They would throw together the 2,939 members at 20 and the 410 at 70, making a total of 3,349 members.

Likewise they would make one sum of the \$14,000 and the \$25,000 of claims, or a total of \$39,000, and then levy on each of the 3,349 members annual assessments amounting to \$11.65 per \$1,000.

By the equal levy method the distribution of the total costs of \$39,000 would compel the 2,939 members to pay \$34,223.50 and the 410 members to pay \$4,776.50; notwithstanding the fact that the Society had incurred claims of \$14,000 on account of the 2,939 members at age 20 and of \$25,000 on account of the 410 at age 70.

The Society as a corporation is concerned only in obtaining contributions sufficient to provide for total claims incurred, and the equal levy plan is all right for that purpose, so long as it can be worked successfully.

But under that plan the young and the old are combined to the great disadvantage of the former.

Standing by themselves, the 2,939 would contribute a total of \$14,000. Combined with only 410 members at age 70, they would be compelled to contribute \$34,223.50.

In the course of operation members continually advance in age, and if there were 1,000 members at age 70, and only 1,200 at age 20, then, at the above ratios, there would be 6 deaths amongst the 1,200 and 61 amongst the 1,000.

The 1,000 members at 70 would impose \$61,000 of claims, and the 1,200 at 20 would cause \$6,000 of claims. Combined, there would be a total of \$67,000 in claims. If the 1,000 and the 1,200 members were to pay equally, they would be called upon to contribute in the year \$30.46 each.

The young men at 20 might willingly submit to an annual contribution of \$11.65 (less than \$1.00 per month), but few of them would pay \$30.46 (more than \$2.50 per month) for \$1,000 of protection.

The equal levy plan and the assessment-as-needed plan of contribution are alike defective in that they fail to distribute equally and equitably the *costs* of protection.

These plans discriminate against the younger members.

In the course of practical operation there are many members at advanced ages, and to favor them by exacting excessive contributions from the members at the younger ages, imposes so much of a burden upon the latter that they withdraw from the Society, and others cannot be induced to take their places, and the plan becomes a failure.

This has been the final result where the equal levy or assessment-as-needed plan has been continued long enough.

From this general statement may be excepted American and British Societies where benefits are small and the fraternal, social, or cooperative features are strong. Also those Societies with small benefits and where the maximum age of admission is low and uniform contributions are maintained by accumulation from *excess* contributions.

CONTRIBUTION AND COST.

For permanent success, the contributions exacted must be proportionate to the *cost* of the protection granted.

Where the yearly *cost* to the Society on \$2,939,000 of insurance is \$14,000, the

proper contribution for the one year for each member per \$1,000 of protection would be \$4.76.

Where the yearly *cost* on \$410,000 of insurance is \$25,000, the proper and equitable contribution is \$60.98 per \$1,000 for the one year of protection.

The contribution by the member is simply the *purchase price*, and the latter is always determined by the *cost* of production, of manufacture, or of *protection*, as the case may be—in life insurance it is the *cost of protection*.

To demand a contribution per \$1,000 from a member at age 70, which is ten or twelve times the contribution demanded of a member at age 20, is not a discrimination against the aged member, but is merely conforming to the requirements of life insurance cost as demonstrated in actual business conduct.

AGE AND COST.

The paramount factor in the determination of life insurance *cost* is that of *age*.

It has been shown that the death-rate increases with the advance in *age*.

An increased death-rate of course means a larger number of deaths out of a given number exposed to death.

The larger number of deaths means a greater amount of claims.

A greater amount of claims means a higher *cost* of life insurance protection.

For the present argument (omitting any consideration of the effect of accumulation), the method of ascertaining *cost* is similar to that for obtaining *death-rate*, or *probability of dying*, namely,

Divide the amount of claims by the insurance protection at risk.

From the experience of any Society the amount of insurance exposed to risk can be obtained, and also the amount of claims can be ascertained, in a like manner to that explained for determination of members exposed to death, and the number dying.

Simple division will obtain the yearly *cost* per \$1,000 of protection at the various ages from year to year.

From a recognized standard mortality table (the N. F. C.), the following *yearly costs* per \$1,000 of protection have been taken for ages 20, 21, 22, 23, 24, 25, 30 and for each quinquennial age to 95 and annually to 99:

YEARLY COSTS PER \$1,000.

Age	Cost	Age	Cost	Age	Cost	Age	Cost
20.....	\$5.00	30.....	\$ 5.55	60.....	\$ 22.75	90.....	\$ 368.70
21.....	5.04	35.....	6.15	65.....	34.39	95.....	602.74
22.....	5.07	40.....	7.17	70.....	53.65	96.....	655.17
23.....	5.11	45.....	8.87	75.....	85.48	97.....	700.00
24.....	5.15	50.....	11.44	80.....	138.09	98.....	1,000.00
25.....	5.20	55.....	15.71	85.....	225.08	99.....	.....

(The Table appears in the Appendix.)

If it is desired to grant insurance protection at *actual cost*, obviously a member would pay the amounts of the yearly costs, increasing with age.

In other words, if a member took out \$1,000 insurance at age 20, and paid \$5.00 in the first year from age 20 to 21, he would pay the *actual cost*, the same being his share of the expected death claims for that year. When he attained 21 years of age, he would contribute \$5.04 as his share of the death losses for the year from age 21 to 22. Similarly, for each advanced year of age his contribution should be increased to meet the increased *insurance cost*.

He might not die until he was 98 years of age, nevertheless the Society would each year take the risk of his dying, and for that protection he should pay according to the cost from year to year.

The *probability of dying* within the year is assumed to become a certainty at age 98, and hence the risk is no longer *contingent*, and therefore the *cost* of \$1,000 of protection is \$1,000, which is the expected contribution on the basis of *cost*, and must be made in the last year of the longest expected life.

On the *actual cost* basis, the contribution corresponds to the yearly increasing costs, and consequently *there must be annually increasing contributions, or their equivalents, in order to have a plan that will provide for the Actual Costs of protection.*

NATURAL PREMIUMS.

Annually increasing contributions, which correspond to the *yearly costs*, are known as "Natural Premiums."

There are a number of Societies which successfully operate under modified "Natural Premium" plans.

The usual objection urged against the pure "Natural Premium" plan is that it requires the largest contributions at the advanced ages, when members are supposed to be least able to pay.

To meet this objection, Societies have modified the plan so as to have the increase in contributions discontinue above a designated age.

The majority of Societies operate under rates of contribution intended to be level and uniform from ages of entry, altogether avoiding the yearly increase from age to age.

INCREASING COSTS OF PROTECTION.

The *yearly increasing costs of protection* must be provided for, whatever the method of contribution.

Obviously, the actual cost of insurance to the Society cannot be affected by any particular method of making contributions to meet the costs.

The insurance costs increase with advance in age, because the Law of Mortality so decrees.

The yearly increasing costs must necessarily furnish the basis for the determination of contributions, under any and all methods.

The simplest and the *natural* method would be to have the contributions correspond to the costs—which is the *natural* premium plan.

However, the *natural* premium plan would make rates so high at extreme old ages that the advantage of protection would not justify the contribution to provide for its cost. (See foregoing yearly costs for age 70 and above—the yearly costs being the same as the *natural* premiums, or increasing contributions). The results in practical operation have been to adopt a modified *natural* premium plan, or a *level* premium plan.

"LIFE EXPECTANCY."

A great many people imagine that "Life Expectancy" enters into the computation of level rates of contribution.

Recently a Texas jurist, in an otherwise able and learned opinion, made the statement that *the adequate level rate was that amount which, placed at compound interest, would produce \$1,000 at the end of life expectancy.*

Only the notorious lack of mathematical acumen by lawyers can excuse this wholly erroneous statement by the learned Lone Star judge.

It is surprising that he failed to test his statement before solemnly delivering it in judgment. For example:

The net level annual premium for \$1,000 of insurance at age 40, by the American Experience Table of Mortality and four per cent interest, is \$22.35.

The period of "Life Expectancy" at age 40, by the same table, is 28.18 years.

The amount of \$22.35 paid annually at four per cent compound interest for 28.18 years is \$1,175.39.

The net level annual premium by the National Fraternal Congress Table of Mortality and four per cent interest, for \$1,000 of insurance at age 40, is \$20.11. The period of "Life Expectancy" by that table, at age 40, is 29.9 years. The amount of \$20.11 paid annually and improved at four per cent compound interest for 29.9 years is \$1,168.19.

In both instances the amount, at the end of "Life Expectancy," is in excess of \$1,000.

The statement of the judge is not only erroneous, but it is fallacious in the failure to take into consideration the fact that a portion of the net level annual premium must be taken to provide for the yearly costs of protection in paying the claims which must mature from year to year. Hence, it is impossible to place the whole premium at compound interest annually.

When the member's share of annual losses is deducted from the net premium, and the balance improved at four per cent compound interest for the period of "Life Expectancy," the net accumulation, at the end of the period by the American Experience Table for 28.18 years, is \$520.32, and by the National Fraternal Congress Table for 29.9 years, it is \$550.84. In neither case is the accumulation at the end of "Life Expectancy" very much more than one-half of \$1,000.

Many persons, without expert knowledge, have arrived at radically wrong conclusions by the employment of "Life Expectancy" and "Average Age" in their computations. The general public, and even the courts, have been misled by these plausible fallacies. "Life Expectancy" and "Average Age" do not enter into the ordinary computations of life insurance premiums.

But we must return to the paramount consideration of the *Insurance Contract*, and an exposition of the relations of the insurer and the insured in respect of the integrity of the Contract in its twofold aspect of the

BENEFIT SIDE and the CONTRIBUTION SIDE.

The Benefit Side involves the insurer's obligation to pay the promised benefit, whether it be a death benefit, a disability benefit, an endowment benefit, or an old age benefit.

The insurer is not altogether responsible and reliable unless every precaution is taken to assure the payment of the promised benefit when it matures into a claim.

If the promise is to pay a benefit of \$1,000 at death of the insured, whenever that event may occur, it is no justifiable excuse for failure to provide for the performance of the promise by alleging that the happening of the event is uncertain, and the date of its occurrence subject to chance, and therefore not ascertainable by the ordinary rules of business.

The promise to pay should not be made if it is impossible or doubtful of performance.

If it partakes of a lottery or a gamble, the making of the promise is in violation of public policy, and should be prohibited.

In this connection, and for emphasis, I desire to repeat what I have said hundreds of times in public addresses and to managers and officials of Fraternal Beneficiary Societies, That no Life or Casualty insurance corporation should be permitted to transact business unless it could show that it would be able (under normal conditions) to carry out its promises in good faith and according to the terms and tenor of its contract.

POSSIBILITY OF PERFORMANCE.

Unless a demonstration of possible performance can be made, the law should prohibit the promise.

Then, What is the demonstration which will show that it is possible for an insurance corporation to provide for the payment of \$1,000 on the death of an insured person whenever that event may happen.

First. It could show that it had \$1,000 in cash, or well secured funds which would be held until the occurrence of the event, and then used for the payment of the benefit.

Second. It could show that it held the *present worth* of the \$1,000 safely invested and earning interest at a rate that would increase the sum, representing the *present value* of the \$1,000, to the face value of the promised benefit at the date of its maturity by death.

Third. It could show that it had the offsetting promise from the insured person to make periodical contributions to the benefit funds of the corporation, and that the *present worth* of these promised contributions was equal in value to the *present worth* of the promised benefit. And should the insured person default in his contributions the corporation thereby would be released from the promise to pay the benefit.

When the proposition is thus plainly put, and its purpose is understood and appreciated, it is inconceivable that any honest man could urge objection to a statutory requirement for such a demonstration as a condition precedent to doing business.

THE INSURANCE PROBLEM.

The query often comes to me, You tell us what the demonstration should show, but How are we to determine *the present value* of \$1,000 payable at an unknown date?

How are we to determine *the present value* of the promise of the insurant to make future periodical contributions when the number may be one or one hundred?

How are we to determine definite provisions for so uncertain an event as the death of an individual which may occur tomorrow or fifty years hence?

These questions in themselves bear witness to the peculiar character of life insurance, and clearly indicate the necessity for the application of special rules when treating the Insurance Contract as *an affair of business*.

If \$1,000 were payable one year hence, and were it desired to obtain the present value on the basis of four per cent interest per annum, any sixth grade schoolboy could readily answer that it was obtained by dividing 1.04 into \$1,000. Or taking the present value of \$1.00 due one year hence, .961538, and multiplying by 1,000.

If the \$1,000 were due ten years hence, multiply by .675564, the present value of \$1.00 due ten years from date.

The insurance problem is to find the present value of \$1,000 payable at the death of the insured.

Obviously, the answer is not obtained by the simple use of interest discount factors for the very good reason that these cannot be applied until some time is set for the payment of the principal sum.

How can a date for maturity be determined when it depends upon the uncertainty of a human life? than which there is nothing less certain.

COOPERATION.

This question develops and discloses the paradoxical nature of the life insurance business.

I have said that we must bring under analysis the Insurance Contract between the insurer and the insured before their relations can be understood, equity established and success assured.

In answer to the last question, I now positively must assert that it is a business impossibility to enter into a life insurance contract with a single individual separate and apart from other insurants similarly situated.

The uncertain duration of the individual life would make a single contract for life insurance a bet, or gamble, pure and simple.

Mutual cooperation is the essence of life insurance.

There must be a number of insured lives similarly conditioned before the single risk is brought within the operation of the Law of Mortality.

This Law, like all Laws of Nature in their operation, produces regularity and continuity in the occurrences of deaths amongst a given number within a given time under similar conditions.

This Law makes no more certain the duration of the individual life of any one of the many associated in mutual cooperation.

Its function is to establish the fact of regularity in the number that may be expected to die within a given period from amongst a group of persons similarly situated.

We must, therefore, predicate the conduct of a life insurance business upon the assumption of cooperation by a number of persons associated for mutual protection, with a managing corporation only as means for the accomplishment of the desired end.

PRESENT VALUE OF THE BENEFIT.

To find the present worth of the promise to pay \$1,000 on the death of an individual, we must find the present value of similar promises to a number of insurants similarly situated, and then by division reduce the value to the basis of the promised \$1,000 benefit.

Even then, before we can make a start, the Laws of Mortality must be brought to a definite basis for mathematical treatment.

This is accomplished by the selection of some standard Mortality Table, or by the construction of a mortality table from the actual experience of a life insurance organization, or from some exhibit of vital statistics.

In passing, it may be recalled that the philosopher and scientist, Dr. Milne, could not secure statistics from any life insurance company, because such data were not available one hundred and thirty-five years ago, hence he had recourse to the records of births and deaths of his native village for the statistics to reduce the Law of Nature to tangible, workable form.

We have the advantage of one hundred years of practical operation in the conduct of the life insurance business should we desire to refer to actual experience for our statistics. Or, we can select any one of many Mortality Tables already at hand.

In another part of this book I have given the several Tables constructed from the experiences of forty-three Fraternal Beneficiary Societies, and also the National Fraternal Congress and the American Experience mortality tables, together with the "death rates" from numerous other tables.

For purposes of illustrating this text I shall take my figures from the National Fraternal Congress Table of Mortality.

Bear in mind that the object is to obtain *the present worth* of promises to pay future benefits upon the death of members.

The use of the Mortality Table is to ascertain the *time* for payment of claims, in order that they may be discounted to find their present value.

Referring to the National Fraternal Congress Table of Mortality (appearing in the Appendix), it is seen that at age 35 (and we will assume age 35 for our prospective insured), 92,215 are the number living, and of these 567 are assumed to die during the year of age 35-36.

Subtracting 567 from 92,215, it is seen that the number living at age 36 is 91,648. Of the latter 578 die during the year of age 36-37.

The two columns record the number living at each subsequent age and the number dying during each year of age, until the last three living at age 98 die during the year of age 98-99.

Assuming that each was insured for \$1,000, the total protection promised would be \$92,215,000 upon the issuance of the 92,215 contracts.

According to the Law of Mortality, exemplified in this table, in the first year there would be 567 deaths maturing \$567,000 of death benefits.

In actual practice, these deaths would occur from week to week and from month to month during the year, but to simplify the succeeding calculations it will be assumed that payment of claims is made at the end of the year.

Then the \$567,000 of death benefits would be assumed to mature one year hence. Multiplying by the present value of \$1.00 due in one year, .961538, the present value of \$567,000 is found to be \$545,190 (giving results by use of five-place logarithms).

In the second year of insurance of the 91,648 living 578 are expected to die, maturing \$578,000 in claims, assumed to be due and payable at the end of that year, which would be two years from the beginning of the Insurance Contract. To find the present worth of \$578,000 due two years hence multiply by the decimal .924556, which is the present value of \$1.00 due in two years.

From the foregoing it is readily understood that the yearly instalments of claims can be ascertained from the column of the number dying as given in the Table of Mortality. When the yearly instalments have been recorded at the ages attained when matured into claims, each instalment can be brought to *present value* by employment of the discount factor corresponding to the year of expected maturity after the beginning of the insurance.

Here it may be stated that were it desired to obtain results on the basis of the experience of the forty-three Societies, or of the Woodmen of the World, or of the Royal Arcanum, or of the Knights of the Maccabees of the World, or of the Knights and Ladies of Security, or of any other Society from whose experience a mortality table has been constructed, then the yearly instalments of claims would be secured from the column of the number dying in such table.

Exhibit 1 in Column 2 gives the instalment of claims for each of the 64 years from age 35 to 99, the aggregate being the total of insurance, \$92,215,000, issued at age 35. In other words, by employment of the mortality table we anticipate the time when all of the insured persons would be dead and all of the promised benefits matured into claims by annual instalments as deaths are assumed to occur from year to year.

In column 3 are given the discount factors on the assumption of four per interest.

In column 4 are the products of the factors by the assumed amount of claims, for corresponding years, the results representing present worth as at the beginning of the insurance. That is to say, \$3,000 due 64 years hence has a present value of \$243.78.

The sum of the present values in column 4, \$27,818,663.44, is the present value of the sum of the instalments of claims, \$92,215,000.

The meaning of the Exhibit is: If 92,215 persons were insured at age 35 under contracts promising a benefit of \$1,000 payable at the death of each, it might be expected—

That \$567,000 of the \$92,215,000 would become claims by deaths in the first year of insurance, \$578,000 in the second year, \$591,000 in the third year, and so on for succeeding years;

That 64 years would expire before the maturity of the last three claims of \$3,000 in the year of age 98-9;

That the *present worth* of the promises to pay \$92,215,000 in benefits as they are expected to mature into claims from year to year would be \$27,818,663.44;

And that the *present value* of the promise to an individual insurant to pay \$1,000 at his death would be the average present value, or \$27,818,663.44 divided by 92,215, equal \$301.68.

Thus we have solved the problem to find the *present value* of the promise to pay a benefit of \$1,000 at the death of a person aged 35 at date of insurance whenever death may occur.

The \$27,818,663.44 represents the sum, if paid at the time the insurance is effected, that would provide for all of the yearly installments of claims to the total of \$92,215,000, when supplemented by four per cent compound interest.

This is called the "Single Premium" for the payment of the claims arising out of the \$92,215,000 of insurance.

Reduced to the basis of \$1,000 (by dividing 92,215 into \$27,818,663.44), \$301.68 is the "Single Premium," or *single payment* to be made by the person at age 35 to purchase an insurance of \$1,000 covering the whole period of life, the sum insured being payable at death whenever that event occur.

Obviously, the *present value* of the sum insured is identical with the *single payment* for the purchase of the sum insured.

The present value of the promised benefits is equal to the single payment to assure the performance of the promise.

If \$27,818,663.44 were improved at four per cent interest for one year, and deduct the claims for the first year, \$567,000; and improve the remainder at four per cent interest for another year, and deduct the claims for the second year, \$578,000; and continue the process for 64 years, the amount at the end of the sixty-fourth year would equal the last instalment of claims, \$3,000.

In this way it can be proved that,

EXHIBIT I.

Years of Insurance.	Yearly Instalments of Death Claims.	Present Value of \$1.00 Due n Years Hence.	Present Value of Instalments of Death Claims.
1	\$ 567,000	.961538	\$ 545,190 00
2	578,000	.924556	534,390 00
3	591,000	.888996	525,400 00
4	606,000	.854804	518,010 00
5	622,000—\$ 2,964,000	.821927	511,230 00—\$2,634,220 00
6	640,000	.790315	505,800 00
7	660,000	.759918	501,550 00
8	683,000	.730690	499,060 00
9	708,000	.702587	497,430 00
10	734,000— 6,389,000	.675564	495,870 00— 5,133,930 00
11	761,000	.649581	494,320 00
12	790,000	.624597	493,440 00
13	822,000	.600574	493,670 00
14	857,000	.577475	494,890 00
15	894,000— 10,513,000	.555265	496,410 00— 7,606,660 00
16	935,000	.533908	499,210 00
17	981,000	.513373	503,620 00
18	1,029,000	.493628	507,950 00
19	1,083,000	.474642	514,040 00
20	1,140,000— 15,681,000	.456387	520,270 00— 10,151,750 00
21	1,202,000	.438834	527,470 00
22	1,270,000	.421955	535,880 00
23	1,342,000	.405726	544,480 00
24	1,418,000	.390121	553,200 00
25	1,501,000	.375117	563,050 00
26	1,588,000	.360689	572,770 00
27	1,681,000	.346817	583,000 00
28	1,778,000	.333477	592,930 00
29	1,880,000	.320651	602,820 00
30	1,985,000	.308319	612,010 00
31	2,094,000	.296460	620,800 00
32	2,206,000	.285058	628,840 00
33	2,318,000	.274094	635,350 00
34	2,430,000	.263552	640,440 00
35	2,539,000 42,913,000	.253415	643,410 00— 19,008,200 00
36	2,645,000	.243669	644,510 00
37	2,744,000	.234297	642,910 00
38	2,832,000	.225285	638,000 00
39	2,909,000	.216621	630,140 00
40	2,969,000	.208289	618,420 00
41	3,009,000	.200278	602,630 00
42	3,026,000	.192575	582,730 00
43	3,016,000	.185168	558,470 00
44	2,977,000	.178046	530,040 00
45	2,905,000	.171198	497,340 00
46	2,799,000	.164614	460,750 00
47	2,659,000	.158283	420,870 00
48	2,485,000	.152195	378,210 00
49	2,280,000	.146341	333,660 00
50	2,050,000	.140713	288,460 00
51	1,800,000	.135301	243,540 00
52	1,539,000	.130097	200,220 00
53	1,277,000	.125093	159,740 00
54	1,023,000	.120282	123,050 00
55	788,000	.115656	91,136 00
56	579,000	.111207	64,389 00
57	404,000	.106930	43,200 00
58	264,000	.102817	27,144 00
59	161,000	.098863	15,917 00
60	89,000	.095060	8,460 40
61	44,000	.091404	4,021 80
62	19,000	.087889	1,669 90
63	7,000	.084508	591 56
64	3,000	.081258	243 78
	\$ 92,215,000	.....	\$27,818,663 44

The present value of the promised benefits must be equal to the single payment to assure the performance of the promise, and

That is the demonstration which should be required of every life insurance organization before being permitted to make promises for the payment of future benefits upon the death of citizens of any State or Province.

If the applicant for life insurance protection were 45 instead of 35 years of age, the process for finding *the present value*, or "Single Premium," of the promise to pay \$1,000 at his death would be identical with that explained for age 35, differing only in the fact that the Mortality Table would be entered at age 45, instead of at 35, and the first yearly instalment of claims would be \$761,000 on account of the 761 deaths during the year amongst the 85,826 persons living at age 45.

Similarly for applicant at age 20. The Table would be entered at that age, the first yearly instalment of claims being \$500,000 on the 100,000 living at age 20.

There would be a total of \$85,826,000 of claims, and 54 yearly instalments to be discounted for the entrants at age 45, while the total would be \$100,000,000, and there would be 79 yearly instalments of claims for the entrant at age 20.

The *present value* of the promise to pay \$1,000 at the death of the entrant at age 45 would be \$391.25, and at age 20 it would be \$211.86. These amounts represent the "Single Premium" for the purchase of \$1,000 insurance at the respective entry ages.

The present value of the promise to pay \$1,000 at the death of a member aged 70 would be \$705.18, representing the "Single Premium" for the purchase of \$1,000 whole life insurance at age 70.

A second reading of the foregoing explanation is justified by its importance, since a thorough understanding of the process to determine *the present value of the promised benefit* is necessary for ready comprehension of the process to determine the amount of *the level annual contribution rate adequate to provide for the promised benefit*.

Before re-reading, have fixed in mind the fact that the column of the number dying during each year of age, as shown by the selected Mortality Table, determine the yearly instalments of claims for the period covered by the promise of protection, whether that period be for the whole term of life or for a shorter stipulated term, and from these yearly instalments of claims is obtained *the present value* of the benefits promised to be paid during such term.

For illustration: If the promise were to pay a benefit of \$1,000 provided death occur before age 70, and the insurance was taken at age 35, then on \$92,215,000 the total of expected benefit payments would be the sum of the claims in column 2 expected to mature during the period of 35 years from age 35 to age 70 amounting to \$42,913,000. The total of the present values of the instalments of yearly claims is the sum of the values in column 4 for the 35 years from age 35 to age 70, amounting to \$19,008,200.

Note carefully:

The present value of \$92,215,000 of life insurance benefits, promised to be paid *whenever death occur*, covering the whole period of life, is \$27,818,663.

The present value of \$92,215,000 of life insurance benefits, promised to be paid if death occur prior to age 70, covering a period of 35 years, is \$19,008,200.

The total amount of claims expected under the whole life contract on the \$92,215,000 of promised protection is \$92,215,000.

The total amount of claims expected under the term contract to age 70 on the \$92,215,000 of promised protection is \$42,913,000.

The present value (single payment) of \$1,000, under a term contract to age 70, is \$19,008,200 divided by 92,215, equal \$206.12—as against \$301.68 on the whole life contract.

Under a term contract for twenty years, of \$92,215,000 face value of insurance at age 35, it would be expected that \$15,681,000 would mature into claims (the sum of column 2 for 20 years), the present value of which would be \$10,151,750. The present value (or single payment) on \$1,000 would be \$10,151,750 divided by 92,215 equal \$110.09.

On a 15-year term the insurance would be \$92,215,000; the expected claims would be \$10,513,000; their present value, \$7,606,660; and the present value of \$1,000 would be \$82.49.

On a 10-year term the figures would be: Insurance, \$92,215,000; total expected claims, \$6,389,000; total present values, \$5,133,930; present value of \$1,000, \$55.67.

On a 5-year term the figures would be: Insurance, \$92,215,000; total claims, \$2,964,000; present value, \$2,634,220; present value of \$1,000, \$28.67.

PRESENT VALUE OF THE CONTRIBUTION.

It is exceptional for a person to pay one premium for life insurance.

Ordinarily it is desired that the contributions be made annually, semi-annually, quarterly, or monthly, and that they continue through the whole period of life or for a limited number of years.

Let it be assumed that the contributions are to be annually in advance and to continue until death.

The question returns, How is the annual contribution to provide for \$1,000 of insurance to be determined?

I have heard hundreds of well-informed men explain the method of computation as did the learned Texas Judge heretofore quoted, who stated that "the adequate level contribution rate was that amount which placed at compound interest would produce \$1,000 at the end of life expectancy."

Many others have said that the proper annual level rate could be obtained by dividing the "single premium," or present value of the sum insured by the years of life expectancy. Thus: For the whole life annual level premium for \$1,000 at age 35 divide \$301.68 by 34, which would give about \$9 instead of the true net rate of \$16.62.

A very intelligent and well-educated man, and altogether of fine business capacity, several years ago announced that he had solved the problem of an equitable and adequate contribution rate, and he founded a society to exploit the plan. A number of societies now operate upon similar plans. The scheme, generally described, is somewhat as follows:

The single premium is divided by the number of years of life expectancy to determine the annual level contribution rate. If the member dies before the end of life expectancy, the amount of the single premium, less the number of assessments paid, is deducted from the face of the certificate.

Thus: Single premium at age 35, \$301.68; years of life expectancy, 34; level annual rate, \$301.68 divided by 34 equal \$8.88 per annum per \$1,000, or 72 cents per month. The member pays twenty-four monthly assessments and dies. His beneficiaries receive \$1,000 minus (\$301.68 minus \$17.76) equal \$716.08.

The effect of the plan is to have an increasing insurance, beginning with \$698.32 (\$1,000 minus \$301.68) and increasing 72 cents with each monthly contribution until the amount equals the face of the certificate at the end of life expectancy.

The effect of operation under this plan was exaggerated, and in consequence the contribution rates were made too low. The manner of obtaining them was altogether erroneous.

This brings us to the correct method for the determination of the adequate level rate, which is preceded by the determination of the single premium for an annuity.

Again recourse must be had to the Mortality Table.

Turn to the Table in the Appendix and find opposite age 35, in the column giving the number living, 92,215 as the first factor in the computation.

Assume that the 92,215 persons agree to contribute \$1.00 at the beginning of each year for the whole period of their lives.

We would have at the beginning of the first year \$92,215.

From the Table we find that 91,648 are expected to be living at the beginning of second year, at age 36, and hence we expect a second contribution of \$91,648 one year hence.

From the Table we find that 91,070 are expected to be living at the beginning of the third year, at age 37, and we expect to receive at the beginning of the third year a contribution of \$91,070.

From the Table we find that 3 are expected to be living at the beginning of the 64th year, at age 98, and we expect to receive from them our 64th annual contribution of \$3.00.

Under the assumption we have the promise of contributions at the beginning of each year of \$1.00 from each survivor, therefore, \$1.00 times the number of living at each year of age will give the expected yearly instalments of contributions for the 64 years, at the expiration of which all of the contributors are assumed to be dead.

Exhibit 2 gives, in column 2, the yearly instalments of promised contributions; in column 3 are the interest discount factors (being unity at beginning of first year, because the first instalment is paid in advance); and in column 4 are the present values of the yearly instalments of the promised contributions, being the product of column 2 by column 3.

The total of the promised contributions is \$3,167,619, and the total of the present values of the yearly instalments is \$1,674,337.74.

The \$1,674,337.74 is the single payment that could be made at age 35 as the equivalent of \$1.00 annually to be contributed at the beginning of each year, by each of the survivors of the 92,215 entrants.

An annual payment is known as an "Annuity," because it is a sum of money *paid annually*.

The above results might be stated to show that for a present sum in one payment of \$1,674,337.74, the 92,215 persons could purchase life annuities of \$1.00 each, payable annually in advance, because the present sum of \$1,674,337.74, improved at 4 per cent compound interest, will provide for the yearly instalments of \$1.00 to each living person (on the assumptions of the National Fraternal Congress Table of Mortality).

Any one can make proof of the statement by deducting from the present sum, \$92,215 (as the first instalment or annuity payment to the 92,215 entrants); and then improve the remainder at 4 per cent interest for one year and deduct \$91,648 (as the second annuity payment to the 91,648 living at the beginning of the second

EXHIBIT II.

Begin- ning of Yrs. of na.	Amount of Annual Contributions at \$1.00 per Member.	Pr.scent Value of \$1.00 Due n Years Hence.	Present Value of Yearly Instalments of Contributions.
1	\$ 92,215	1.000000	\$ 92,215.00
2	91,648	.961538	88,123.30
3	91,070	.924556	84,199.50
4	90,479	.888996	80,435.80
5	89,873—\$ 455,285	.854804	76,824.80—\$ 421,798.40
6	89,251	.821927	73,358.90
7	88,611	.790315	70,031.70
8	87,951	.759918	66,836.60
9	87,268	.730690	63,766.90
10	86,560— 894,926	.702587	60,816.90— 756,609.40
11	85,826	.675564	57,982.10
12	85,065	.649581	55,257.50
13	84,275	.624597	52,639.00
14	83,453	.600574	50,120.80
15	82,596— 1,316,141	.577475	47,698.20— 1,020,307.00
16	81,702	.555265	45,367.30
17	80,767	.533908	43,123.20
18	79,786	.513373	40,960.90
19	78,757	.493628	38,877.70
20	77,674— 1,714,827	.474642	36,868.40— 1,225,504.50
21	76,534	.456387	34,930.10
22	75,332	.438834	33,059.30
23	74,062	.421955	31,251.90
24	72,720	.405726	29,505.40
25	71,302	.390121	27,817.40
26	69,801	.375117	26,184.40
27	68,213	.360689	24,604.50
28	66,532	.346817	23,075.20
29	64,754	.333477	21,594.80
30	62,874	.320651	20,161.40
31	60,889	.308319	18,773.90
32	58,795	.296460	17,431.00
33	56,589	.285058	16,131.80
34	54,271	.274094	14,875.90
35	51,841— 2,699,336	.263552	13,663.30— 1,578,564.80
36	49,302	.253415	12,494.10
37	46,657	.243669	11,369.30
38	43,913	.234297	10,289.10
39	41,081	.225285	9,255.40
40	38,172	.216621	8,269.20
41	35,203	.208289	7,332.70
42	32,194	.200278	6,448.00
43	29,168	.192575	5,617.30
44	26,152	.185168	4,842.80
45	23,175	.178046	4,126.40
46	20,270	.171198	3,470.40
47	17,471	.164614	2,876.10
48	14,812	.158283	2,344.60
49	12,327	.152195	1,876.20
50	10,047	.146341	1,470.40
51	7,997	.140713	1,125.30
52	6,197	.135301	838.50
53	4,658	.130097	606.00
54	3,381	.125093	423.00
55	2,358	.120282	283.60
56	1,570	.115656	181.60
57	991	.111207	110.20
58	587	.106930	62.80
59	323	.102817	33.20
60	162	.098863	16.00
61	73	.095060	6.90
62	29	.091404	2.70
63	10	.087889	.88
64	3	.084508	.26
	\$3,167,619		\$1,674,337.74

year); and proceeding in a similar manner to the 64th year, when it will be found that \$3.00 are on hand to pay the 3 survivors at the beginning of the year of assumed existence.

Dividing \$1,674,337.74 by 92,215 we obtain \$18.16 (nearly) as the present value, or "Single Premium," for a Life Annuity of \$1.00 beginning at age 35.

THE LEVEL ANNUAL PREMIUM.

Having obtained the Single Premium (\$301.68) for a promised benefit of \$1,000 payable at death whenever that event may occur;

Having obtained the Single Premium (\$18.16) for a promised payment of \$1.00 annually until death;

We are now in position to solve the problem as to the amount of the Level Annual Contribution to provide for a promised Death Benefit of \$1,000.

The solution is effected by establishing the relations between the Single Premium for the Insurance and the Single Premium for the Annuity—that is, between the *present value of the Promised Benefit payable at death and the present value of the Promised Annual Contribution payable until death.*

Note the simplicity of the equation:

If \$18.16 will provide for \$1.00 payable annually until death, then a present sum of \$301.68 will provide for \$16.62 payable annually until death, being the quotient of \$301.68 divided by \$18.16.

That is to say, \$16.62 paid annually is the equivalent of \$301.68 paid in one sum. Or, \$301.68 is the *present value* of an annual contribution of \$16.62 payable during life;

But \$301.68 is also the present value of a Benefit of \$1,000 payable at death;

Or \$301.68 is the Single Payment required to provide for the Benefit of \$1,000 payable at death;

Then \$16.62, payable annually until death, being the equivalent of \$301.68 paid in one sum, must be the annual contribution required to provide for the promised Benefit of \$1,000 payable at death.

It has taken many words and much space to make a plain and untechnical explanation of the method to determine the level annual contribution at age 35 to provide for the promise of \$1,000 payable at death, but I feel justified in the effort because of the prevailing unfamiliarity with the subject by capable and successful managers.

However, the whole matter resolves itself into the calculation of Single Premiums for Insurance and Single Premiums for Annuities, and with the first as dividends and the second as divisors, the quotients will be the required Level Annual Contribution Rates.

Thus: To find the level annual contribution (paid in advance) to provide for \$1,000 at death prior to age 70;

Divide 92,215 into \$1,578,564.80, the sum of the present values of the yearly instalments of contributions for the 35 years (35-70), to obtain \$17.12, the Single Premium for an Annuity payable to age 70.

Then divide \$206.12, the Single Premium to provide \$1,000, payable at death prior to 70, by this temporary annuity \$17.12, and the result is \$12.04, the required Level Annual Contribution to provide \$1,000 payable at death prior to age 70.

For the Level Annual Contribution for \$1,000 at age 35 on a 20-year term contract,

Divide \$1,225,504.50 by 92,215, obtaining \$13.29, the value of the temporary annuity, and dividing this into \$110.09, the single premium for the temporary insurance, we obtain \$8.28 as the required rate.

By a similar process (using the side totals in the two exhibits) the Level Annual Contribution Rate can be obtained for 15 and 10 and 5-year terms for entry age 35.

Exhibits could be prepared for other ages of entry and values computed by following the procedure set forth in the given illustration.

It is well to explain that the Level Whole Life Annual Contribution Rate could have been directly obtained by dividing \$1,674,337.74 (the present value of yearly instalments of \$1.00 contributions) into \$27,818,663.44 (the present value of the yearly instalments of claims).

And similarly the annual contribution for Term to age 70 could be found by dividing \$1,578,564.80 into \$10,008,200.00. For 20-Year Term, \$1,225,504.50 into \$10,151,750.00. And similarly for the other terms.

In other words if the sum of the present values of the yearly instalments of claims on the basis of \$1,000 per member is divided by the sum of the present values of the yearly instalments of contributions on the basis of \$1.00 per member, the quotient will be the level annual contribution rate to provide for the \$1,000 death benefit.

The employment of this principle gives a short cut for the determination of the Single Premium for Insurance, the Single Premium for an Annuity and the Level Annual Premium.

This shorter process consists of a summation of the column of present values of promised benefits and the column of present values of promised contributions (columns 4 of Exhibits 1 and 2), beginning the summation at the 64th item and taking sub-totals in summing upward to the first year at age of entry. From the summed columns readily can be gotten the dividend and divisor to obtain the level annual contribution rate as above indicated. This process is explained in more detail in the treatment of "Commutation Columns."

The level annual premiums for limited payment contracts and endowment contracts can be obtained from the present values of instalments of claims and present value of the instalments of contributions in a similar way to that of determining the level annual premium for whole life contracts and for term contracts.

It has been shown that by dividing the sum of the instalments of claims \$27,818,663.44 by the sum of the present values of the instalments of contributions, \$1,674,337.74, the net level annual premium for a whole life contract on \$1,000 at age 35 is obtained, and it has been shown that if we divide the sum of the present value of the instalment of claims for 20 years, \$10,151,750, by the sum of the present values of the instalments of contributions for 20 years, \$1,225,504.50, we obtain \$8.28, the level annual premium for a term contract for twenty years, to provide for \$1,000 payable at death within that period.

If now we want the net level annual premium for a whole life contract where the benefit is payable at death whenever that event occur, but the contributions are limited to 20 years, we would divide the sum of all the present values of the instalments of claims, \$27,818,663.44, by the sum of the present values of the instalments of contributions for 20 years, \$1,225,504.50, giving us \$22.70 as the net level annual premium to provide for \$1,000 death benefit whenever that even may occur with the contributions limited to 20 annual payments.

If we wanted to limit the number of annual contributions to 15, then we would divide \$27,818,663.44 by \$1,020,307. Similarly we would divide by the sum of the present values of the instalments of contributions for 10 years or 5 years to obtain the level annual premium for whole life protection with the contributions limited to 10 or 5 payments.

The annual premium for an endowment insurance is made up of the sum of an annual premium for term insurance and an annual premium for "pure endowment" insurance. To obtain the net annual premium for a 20-year endowment policy, we would take the annual premium for the 20-year term, \$8.28, and add it to the premium for a pure endowment.

An endowment insurance contract promises to pay the sum insured at the end of the stated period or to pay the sum insured at prior death. If we have under consideration a 20-year endowment insurance contract, then the 20-year term level annual rate of \$8.28 for entry age 35 would provide for the \$1,000 payable at death within the period 20 years, and this \$8.28 is obtained as heretofore explained.

The endowment would provide for the payment of \$1,000 to each of the survivors at the end of the 20 years. By reference to the mortality table, in the column of the number living opposite age 55 (the end of 20 years from age 35), we find that the number of survivors are 76,534, and each one of these receiving \$1,000 would make \$76,534,000 that we must have on hand at the end of 20 years in order to pay the promised endowments. By reference to column 4 of Exhibit 2 we find that at the end of the twentieth year (the beginning of the twenty-first year) that the value of \$76,534 is \$34,930.10, and hence the value of \$76,534,000 would be 1,000 times \$34,930.10 or \$34,930,100.

This latter amount, \$34,930,100, is the present value or the single premium at age 35 of \$76,534,000 payable at the end of 20 years. All of the living members at the beginning of each of the 20 years must contribute toward the payment of the endowment of \$76,534,000, and by reference to column 2 of Exhibit 2 it is seen that the survivors would contribute at \$1.00 each the sum of \$1,714,827, the present value of which would be \$1,225,504.50.

Dividing the single premium for the pure endowment, \$34,930,100, by the above "temporary annuity" of \$1,225,504.50, we obtain \$28.50 as the required net annual level premium per \$1,000 for the pure endowment insurance.

Adding \$28.50 to the annual premium for 20-year term, \$8.28, we have \$36.78 as the required annual premium per \$1,000 for the endowment insurance at age 35.

As stated, the level annual premium of \$8.28 per \$1,000 paid by each of the survivors beginning with 92,215 entrants at age 35, will provide for the total of \$15,681,000 of death claims which are expected to mature during the 20 years, while the level annual premium of \$28.50 will provide for the 76,534 endowments which are expected to mature at the end of the 20 years, and of course the sum of these two level annual premiums, \$36.78, will provide for the death claims that mature during the 20 years, and also the endowments which mature at the end of the 20 years.

From the above it will be appreciated that Exhibits 1 and 2 give the basis for the determination of level annual premiums to provide for death benefits and endowments under many forms of contracts. Similar columns to those given in Exhibits 1 and 2 are prepared which facilitate the computation of contribution rates, and these are known as "commutation columns," which hereafter will be explained.

GENERAL STATEMENT.

For emphasis, I will restate some of the general propositions which have been illustrated.

1. The single premium for insurance is the present value of the promised death benefits.

2. The single premium for insurance, at the inception of the contract, is equal to the present value of the future level annual contribution.

3. The single premium for insurance divided by the single premium for an annuity will give the level annual premium to provide for the promised death benefit.

4. The mortality table to be used in the computation of the single premium for insurance and the single premium for annuities, may be constructed from any reliable and sufficient data derived from the single or combined experience of insurance organizations. Since the values are derived from the numbers living and numbers dying according to the actual past experience of organizations, the result of computations must reflect what will be anticipated in the future experience, and managers of such organizations will make a grievous error if they are not guided by results obtained as hereinbefore indicated.

5. The level annual premium is obtained without regard to any division into "mortality" and "reserve" elements. It is a fallacy to suppose that the "reserve" and "mortality" elements are separately computed. The separation of the net level annual rate into the "mortality element" and the "reserve element" is a fiction in so far as the computation of the level rate is concerned. The reserve accumulation is ascertained *after* the net level annual contribution rate has been determined.

ANOTHER METHOD OF COMPUTATION.

It has been suggested that the explanation of the methods for the determination of single and annual premiums cannot be made too clear, and following this suggestion I submit another method of computation by the use of the "probabilities of living" and "probabilities of dying," instead of the "number living" and "number dying."

Referring to the National Fraternal Congress Mortality Table at age 35, the number living is found to be 92,215, and the number dying during the year of age, 35-36, is 567. By dividing the number living into the number dying the "probability of dying" in the first year is found to be .006149.

The number dying in the next year of age, 36-37, is 578. By dividing 92,215, the number living at age 35, into 578, the number dying at age 36, we obtain .006268 as the "probability of dying" in the second year after entry at age 35.

The number dying at age 37 is recorded as 591, and dividing this by 92,215, the number living at age 35, we find the "probability of dying," .006409, in the third year after entry at age 35.

By dividing the number 92,215, living at age 35, into the number dying at any advanced age, the "probability of dying" in the year at that advanced age can be obtained.

The probability of dying in the current year is obtained by dividing the number living at the beginning of the current year into the number dying during the current year of age—as 567 divided by 92,215. In life insurance the probabilities of dying within the current year at the different ages are employed to determine the current yearly costs of protection as hereinbefore shown as "Natural Premiums."

The probability of dying in the first year, or the second, or the third, or any other year after entry is made the basis for the computation of the single premium for insurance, the probabilities of dying in the respective years being assumed as the anticipated yearly costs of protection for those years.

That is to say, the probability of dying in the first year being .006149 (as above), on the basis of \$1,000 it can be assumed that \$6.149 would be the year's cost to the society for assuming the risk of paying \$1,000 in the event of death during the current year.

It has also been shown that .006268 is the probability at age 35 of dying in the second year, and the society could accept \$6.268 as the expected cost for the risk on \$1,000 in the second year of insurance.

And the society could accept \$6.409 as the cost for the risk in the third year, if the payment were made in advance at age 35 (without discount).

If the member waited until he reached age 36, then the current cost for the year 37-38 would be \$6.490, instead of \$6.409 where he made an advance arrangement at age 35 for the insurance in the third year.

However, if the insurant desired to make this advance contract, yearly costs could be discounted in like manner to the discounting of the yearly instalments of claims, and the sum of these discounted values would be the Single Premium for the Insurance. The process follows, assuming age of entry 35, mortality according to the National Fraternal Congress Table and interest at four per cent:

(1)	(2)	(3)	
\$ 6.149 × .961538 =	\$ 5.9122		Single Premium, age 35, 10 years Insurance .. \$55.674
6.268 × .924556 =	5.7951		Interest for 1 year at 4% .. 2.227
6.409 × .888996 =	5.6975		Premium and Interest end of 1st year .. \$57.901
6.572 × .854804 =	5.6174		Insurance Cost 1st year .. 6.149
6.745 × .821927 =	5.5440		Single Premium Reserve end 1st year .. \$51.752
6.940 × .790315 =	5.4850		Interest for 2d year at 4% .. 2.070
7.157 × .759918 =	5.4389		Premium Reserve and Interest end 2d year .. \$53.822
7.407 × .730690 =	5.4119		Insurance Cost for the 2d year .. 6.268
7.678 × .702587 =	5.3943		Premium Reserve end of 2d year .. \$47.554
7.960 × .675564 =	5.3773		Interest for the 3d year at 4% .. 1.902
\$69.285	\$55.6736		Premium Reserve and Interest end 3d year .. \$49.456
			Insurance Cost for the 3d year .. 6.409
			Premium Reserve at end of 3d year .. \$43.047
			Interest for the 4th year at 4% .. 1.722
			Premium Reserve and Interest end 4th year .. \$44.769
			Insurance Cost for 4th year .. 6.572
			Premium Reserve end of 4th year .. \$38.197
			Interest for the 5th year .. 1.528
			Premium Reserve and Interest end of 5th year .. \$39.725
			Insurance Cost for the 5th year .. 6.745
			Premium Reserve end of 5th year .. \$32.980
			Interest for the 6th year .. 1.319
			Premium Reserve and Interest end 6th year .. \$34.299
			Insurance Cost for the 6th year .. 6.940
			Premium Reserve end of 6th year .. \$27.359
			Interest for the 7th year .. 1.094
			Premium Reserve and Interest end 7th year .. \$28.453
			Insurance Cost for 7th year .. 7.157
			Premium Reserve end of 7th year .. \$21.296

Column 1 gives the Insurance Cost, derived from the Probability of dying during ten years.

Column 2 gives the present value of One Dollar due in 1, 2, etc., years, at 4% Interest.

Column 3 gives the discounted values of the Cost of Insurance, the sum of which is (\$55.6736) the Present Value of all of these discounted Costs, being the Single Premium or Payment for \$1,000 Protection for 10 years.

That this one Payment of \$55.6736 is sufficient to meet the In-

insurance Costs for the ten years is demonstrated by the accompanying calculation.

Interest for the 8th year.....	\$ 852
Premium Reserve and Interest end 8th year..	\$22.148
Insurance Cost for the 8th year.....	7.407
Premium Reserve end of 8th year.....	\$14.741
Interest for the 9th year.....	590
Premium Reserve and Interest end 9th year..	\$15.331
Insurance Cost for the 9th year.....	7.678
Premium Reserve end of 9th year.....	\$ 7.653
Interest for the 10th year.....	.306
Premium Reserve and Interest end 10th year..	\$ 7.950
Insurance Cost for the 10th year.....	7.960
Termination of the 10 years' Protection.....	\$ 0.000

The foregoing computation and demonstration are based on a single insurance of \$1,000, which is entirely theoretical in treatment and not possible of practical exemplification. However, if 92,215 persons are taken for the demonstration, the single premium of 92,215 times \$55.6736 can be proved adequate for the payment of claims, the latter being determined by the death ratios shown in the Mortality Table in the column of "Probabilities of Dying." This entire sum would be improved at 4 per cent interest for the first year and \$567,000 in claims deducted; then improve the remainder at 4 per cent for one year and deduct \$578,000; improve the remainder for the third year and deduct \$591,000; and thus continuing for the ten years it will be found that the total of \$6,389,000 of claims has been provided for.

The "probabilities of living" to the end of the first, second, third and so forth years, are readily obtained and discounted under similar treatment to that shown for the "probabilities of dying" in the first, second, third and so forth years, and the result will be the single premiums for a ten-year Annuity \$8,2048, and being divided into the Single Premium for the 10-year term insurance (\$55.6736) will produce the ten-year term Level Annual Contribution Rate of \$6,7855 to provide for the promised \$1,000 death benefit, if death occur within the ten years.

Level annual rates for whole life and other forms of contracts could likewise be obtained.

COMPUTATION WITH LAPSE FACTOR CONSIDERED.

There prevails a general impression that considerable reduction in the rates of contribution can be made, if allowance is made for gains from excess contributions of members who lapse or become suspended. In order to show what reduction may be anticipated, I have taken the select lapse experience of a very large society, for entrants at age 35, and have constructed four tables similar to those already given, save in the particular of using the lapse rate in diminishing the amount of protection from year to year. That is to say, the insurance in force at the beginning of the year is not only decreased by the amount of death claims during the year, but also by the amount terminated by lapse.

After the full explanation made of the foregoing tables, it is unnecessary to enter into any detailed discussion of the following exhibits, 3, 4, 5 and 6.

I have assumed such an amount of insurance at the beginning of the first year as to produce at the end of the fifteenth year the same amount of insurance as found in Exhibit 1 at the end of the fifteenth year. In Exhibit 1 the original amount of protection was \$92,215,000, which diminished by death claims during

fifteen years left at the beginning of the sixteenth year \$81,702,000. At the beginning of the first year in column 2 of Exhibit 3 the amount of protection is \$181,452,000, which being diminished during fifteen years by deaths and lapses is reduced to \$81,702,000 at the beginning of the sixteenth year. By this arrangement there is an agreement in the amounts of protection at the beginning of the sixteenth year of Exhibits 1 and 3. Likewise, after the fifteenth year, all of the items in all of the columns are the same.

From Exhibit 3 it will be seen that during the first 15 years \$86,697,000 of protection are terminated by lapse or suspension, while during the 64 years \$94,755,000 are terminated by death. Assuming that the level rate of contribution for entry age is in excess of current yearly costs of protection, then it is evident there is a gain to the surviving and persistent members from the forfeitures of excess contributions by those members who lapse. That this gain has been exaggerated by the estimates of those who favor discounting contributions in anticipation of gains from forfeitures can be demonstrated from a comparison of the two sets of tables respectively constructed with and without consideration of the lapse factor.

Protection assumed with lapse.....	\$181,452,000
Protection assumed without lapse.....	92,215,000
	<hr/>
Excess protection at risk.....	\$ 89,237,000
	<hr/>
Total claims with lapse.....	\$ 94,755,000
Total claims without lapse.....	92,215,000
	<hr/>
Excess claims with lapse.....	\$ 2,540,000
	<hr/>
Total contributions with lapse.....	\$ 3,547,005
Total contributions without lapse.....	3,167,619
	<hr/>
Total excess with lapse.....	\$ 379,386

From the above it will be noted that with \$181,452,000 of protection, the sum of the yearly installments of contributions, on the basis of \$1.00 per \$1,000 of protection, is only \$379,386 in excess of the contributions realized on the same basis from \$92,215,000 of protection.

Starting out with almost double the amount of protection it would seem that a very much greater excess in contributions would be realized than shown in the above comparison, with and without the lapse factor. The reason for the small excess in contribution is that the great bulk of the lapses is in the early years of insurance. In the sixth column of Exhibit 3 it will be noted that \$22,921,000 is terminated by lapse in the second year of insurance. In the first year of insurance \$9,544,000 is terminated by lapse, notwithstanding the fact that the average exposure in the first year is only from three to six months for those who lapse. In the third year of insurance \$12,921,000 is terminated by lapse.

In the first five years of insurance there are terminated by lapse \$72,682,000 of the entire \$86,697,000 of terminations.

While the average lapse rate for the entire membership of a society may be approximately uniform from year to year, when there is no unusual disturbance of this average uniformity in the terminations by lapse, yet this fact does not give any indication of the gains which may be expected from forfeitures by such terminations. The experience of every life insurance organization shows that after the tenth or fifteenth year lapses cease amongst the original entrants; provided there have

been level contributions rates from ages of entry. Under the assessment plan members at advanced ages, after 20, 25, and 30 years of membership, lapse in large numbers, and the heavy lapse rate materially increases the death rate. This fact can be noted by reference to the experience of the 43 societies. The fact that there is a continuous and comparatively regular rate of lapse amongst the new entrants tends to mislead those persons who will insist upon drawing conclusions from averages.

A careful study of the following four tables should impress upon those who have favored advance reductions in rates of contributions by anticipation of gains from forfeitures the fact that this reduction must be made with extreme care and conservatism.

ANNUAL PREMIUMS REDUCED BY FORFEITURE.

From column 4 of Exhibit 4 we find the present value of the yearly instalments of claims, or "Single Premium," for \$181,452,000 of protection to be \$30,013,845, while the present value of the yearly instalments of contributions is \$2,018,413.

Dividing \$30,013,845 by \$2,018,413, we obtain the annual level premium per \$1,000 of whole life protection to be \$14.87, as against \$16.62 without considering the lapse factor, being an annual difference of \$1.75, which is the reduction in premium per \$1,000 on account of gains from forfeitures.

In order to indicate the effect of the gains from lapses, the following comparisons are submitted:

15-YEAR TERM.	
Without lapse factor.....	\$ 7.46
With lapse factor.....	7.18
20-YEAR TERM.	
Without lapse.....	\$ 8.28
With lapse.....	7.87
TERM TO AGE 70.	
Without lapse.....	\$12.04
With lapse.....	11.03
ORDINARY WHOLE LIFE.	
Without lapse.....	\$16.62
With lapse.....	14.87
20-PAY LIFE.	
Without lapse.....	\$22.70
With lapse.....	19.12
PAYMENTS LIMITED TO AGE 70.	
Without lapse.....	\$17.62
With lapse.....	15.61
15-YEAR ENDOWMENT.	
Without lapse.....	\$51.92
With lapse.....	40.43
20-YEAR ENDOWMENT.	
Without lapse.....	\$36.78
With lapse.....	30.72
ENDOWMENT AT AGE 70.	
Without lapse.....	\$19.96
With lapse.....	17.53

EXHIBIT III.

Years of Insurance.	Insurance at Beginning of Years.	Probability of Dying.	Yearly Instalments of Death Claims.	Lapse Rate.	Yearly Terminations By Lapse.
(1)	(2)	(3)	(4)	(5)	(6)
1	\$181,452,000	.0061487	\$ 1,116,000	.05260	\$ 9,544,000
2	170,792,000	.0063067	1,077,000	.13420	22,921,000
3	146,794,000	.0064395	953,000	.08802	12,921,000
4	132,920,000	.0066977	890,000	.07223	9,601,000
5	122,429,000	.0069209	847,000	.06285	7,695,000
6	113,887,000	.0071708	816,000	.05198	5,920,000
7	107,151,000	.0074483	798,000	.04398	4,713,000
8	101,640,000	.0077657	790,000	.03778	3,840,000
9	97,010,000	.0081129	787,000	.03484	3,379,000
10	92,844,000	.0084797	787,000	.02591	2,406,000
11	89,651,000	.0088668	795,000	.01832	1,643,000
12	87,213,000	.0092870	810,000	.01313	1,198,000
13	85,205,000	.0097538	831,000	.00624	531,000
14	83,843,000	.0102693	861,000	.00341	286,000
15	82,696,000	.0108238	895,000	.00120	99,000
16	81,702,000	.0114440	935,000	.....	.....
17	80,767,000	.0121460	981,000	.....	.....
18	79,786,000	.0128970	1,029,000	.....	.....
19	78,757,000	.0137512	1,083,000	.....	.....
20	77,674,000	.0146767	1,140,000	.....	.....
21	76,534,000	.0157054	1,202,000	.....	.....
22	75,332,000	.0168587	1,270,000	.....	.....
23	74,062,000	.0181200	1,342,000	.....	.....
24	72,720,000	.0194994	1,418,000	.....	.....
25	71,302,000	.0210513	1,501,000	.....	.....
26	69,801,000	.0227504	1,588,000	.....	.....
27	68,213,000	.0246434	1,681,000	.....	.....
28	66,532,000	.0267240	1,778,000	.....	.....
29	64,754,000	.0290330	1,880,000	.....	.....
30	62,874,000	.0315711	1,985,000	.....	.....
31	60,889,000	.0343904	2,094,000	.....	.....
32	58,795,000	.0375202	2,206,000	.....	.....
33	56,589,000	.0409620	2,318,000	.....	.....
34	54,271,000	.0447753	2,430,000	.....	.....
35	51,841,000	.0489767	2,539,000	.....	.....
36	49,302,000	.0536489	2,645,000	.....	.....
37	46,657,000	.0588122	2,744,000	.....	.....
38	43,913,000	.0644912	2,832,000	.....	.....
39	41,081,000	.0708113	2,909,000	.....	.....
40	38,172,000	.0777795	2,969,000	.....	.....
41	35,203,000	.0854757	3,009,000	.....	.....
42	32,194,000	.0939927	3,026,000	.....	.....
43	29,168,000	.1034010	3,016,000	.....	.....
44	26,152,000	.1138345	2,977,000	.....	.....
45	23,175,000	.1253506	2,905,000	.....	.....
46	20,270,000	.1380858	2,799,000	.....	.....
47	17,471,000	.1521951	2,659,000	.....	.....
48	14,812,000	.1677694	2,485,000	.....	.....
49	12,327,000	.1849599	2,280,000	.....	.....
50	10,047,000	.2040410	2,050,000	.....	.....
51	7,997,000	.2250844	1,800,000	.....	.....
52	6,197,000	.2483460	1,539,000	.....	.....
53	4,658,000	.2741520	1,277,000	.....	.....
54	3,381,000	.3025732	1,023,000	.....	.....
55	2,358,000	.3341815	788,000	.....	.....
56	1,570,000	.3687898	579,000	.....	.....
57	991,000	.4076690	404,000	.....	.....
58	587,000	.4497445	264,000	.....	.....
59	323,000	.4984520	161,000	.....	.....
60	162,000	.5493827	89,000	.....	.....
61	73,000	.6027397	44,000	.....	.....
62	29,000	.6551724	19,000	.....	.....
63	10,000	.7000000	7,000	.....	.....
64	3,000	1.0000000	3,000	.....	.....
			\$ 94,755,000		\$ 86,697,000

EXHIBIT IV.

Years of Insurance.	Yearly Instalments of Claims.	Present Value of \$1.00 Due n Years Hence.	Present Value of Instalments of Death Claims.
(1)	(2)	(3)	(4)
1	\$ 1,116,000	.961538	\$ 1,073,100.00
2	1,077,000	.924556	995,750.00
3	953,000	.888996	847,210.00
4	890,000	.854804	760,780.00
5	847,000	.821927	696,160.00
6	816,000	.790315	644,900.00
7	798,000	.759918	606,420.00
8	790,000	.730690	577,240.00
9	787,000	.702587	552,930.00
10	787,000	.675564	531,670.00
11	795,000	.649581	516,420.00
12	810,000	.624597	505,930.00
13	831,000	.600574	499,080.00
14	861,000	.577475	497,200.00
15	895,000	.555265	496,960.00—\$ 9,801,750.00
16	935,000	.533908	499,210.00
17	981,000	.513373	503,620.00
18	1,029,000	.493628	507,950.00
19	1,083,000	.474642	514,040.00
20	1,140,000	.456387	520,270.00— 12,346,840.00
21	1,202,000	.438834	527,470.00
22	1,270,000	.421955	535,880.00
23	1,342,000	.405726	544,480.00
24	1,418,000	.390121	553,200.00
25	1,501,000	.375117	563,050.00
26	1,588,000	.360689	572,770.00
27	1,681,000	.346817	583,000.00
28	1,778,000	.333477	592,910.00
29	1,880,000	.320651	602,820.00
30	1,985,000	.308319	612,010.00
31	2,094,000	.296460	620,800.00
32	2,206,000	.285058	628,850.00
33	2,318,000	.274094	635,350.00
34	2,430,000	.263552	640,440.00
35	2,539,000	.253415	643,410.00— 21,203,280.00
36	2,645,000	.243669	644,510.00
37	2,744,000	.234297	642,910.00
38	2,832,000	.225285	638,000.00
39	2,909,000	.216621	630,140.00
40	2,969,000	.208289	618,420.00
41	3,009,000	.200278	602,630.00
42	3,026,000	.192575	582,730.00
43	3,016,000	.185168	558,470.00
44	2,977,000	.178046	530,040.00
45	2,905,000	.171198	497,340.00
46	2,799,000	.164614	460,750.00
47	2,659,000	.158283	420,970.00
48	2,485,000	.152195	378,210.00
49	2,280,000	.146341	333,660.00
50	2,050,000	.140713	288,460.00
51	1,800,000	.135301	243,540.00
52	1,539,000	.130097	200,220.00
53	1,277,000	.125093	159,740.00
54	1,023,000	.120282	123,050.00
55	788,000	.115656	91,138.00
56	579,000	.111207	64,389.00
57	404,000	.106930	43,200.00
58	264,000	.102817	27,144.00
59	161,000	.098863	15,917.00
60	89,000	.095060	8,460.40
61	44,000	.091404	4,021.80
62	19,000	.087889	1,669.90
63	7,000	.084508	591.56
64	3,000	.081258	243.78
	\$94,755,000		\$30,013,845.44

EXHIBIT V.

Insurance Protection.	Probability of Living Less Probability of Lapee.	Years of Insurance.	Insurance at Beginning of Years Subject to Contributions.	Assumed Annual Premium Paid in Advance.	Yearly Instalments of Contributions.
(1)	(2)	(3)	(4)	(5)	(6)
\$181,452,000	.9412513	1	\$181,452,000	\$1.00	\$181,452
181,452,000	.8594933	2	170,792,000	1.00	170,792
170,792,000	.9054905	3	146,794,000	1.00	146,794
146,794,000	.9210723	4	132,920,000	1.00	132,920
132,920,000	.9302291	5	122,429,000	1.00	122,429
122,429,000	.9408492	6	113,887,000	1.00	113,887
113,887,000	.9485717	7	107,151,000	1.00	107,151
107,151,000	.9544543	8	101,640,000	1.00	101,640
101,640,000	.9570471	9	97,010,000	1.00	97,010
97,010,000	.9656103	10	92,844,000	1.00	92,844
92,844,000	.9728132	11	89,651,000	1.00	89,651
89,651,000	.9769830	12	87,213,000	1.00	87,213
87,213,000	.9840062	13	85,205,000	1.00	85,205
85,205,000	.9863207	14	83,843,000	1.00	83,843
83,843,000	.9879762	15	82,696,000	1.00	82,696
82,696,000	.9891762	16	81,702,000	1.00	81,702
81,702,000	.9885560	17	80,767,000	1.00	80,767
80,767,000	.9878540	18	79,786,000	1.00	79,786
79,786,000	.9871030	19	78,757,000	1.00	78,757
78,757,000	.9862488	20	77,674,000	1.00	77,674
77,674,000	.9853233	21	76,534,000	1.00	76,534
76,534,000	.9842946	22	75,332,000	1.00	75,332
75,332,000	.9831413	23	74,062,000	1.00	74,062
74,062,000	.9818800	24	72,720,000	1.00	72,720
72,720,000	.9805006	25	71,302,000	1.00	71,302
71,302,000	.9789487	26	69,801,000	1.00	69,801
69,801,000	.9772496	27	68,213,000	1.00	68,213
68,213,000	.9753566	28	66,532,000	1.00	66,532
66,532,000	.9732760	29	64,754,000	1.00	64,754
64,754,000	.9709670	30	62,874,000	1.00	62,874
62,874,000	.9684289	31	60,889,000	1.00	60,889
60,889,000	.9656096	32	58,795,000	1.00	58,795
58,795,000	.9624798	33	56,589,000	1.00	56,589
56,589,000	.9590380	34	54,271,000	1.00	54,271
54,271,000	.9552247	35	51,841,000	1.00	51,841
51,841,000	.9510233	36	49,302,000	1.00	49,302
49,302,000	.9463511	37	46,657,000	1.00	46,657
46,657,000	.9411878	38	43,913,000	1.00	43,913
43,913,000	.9355088	39	41,081,000	1.00	41,081
41,081,000	.9291887	40	38,172,000	1.00	38,172
38,172,000	.9222205	41	35,203,000	1.00	35,203
35,203,000	.9145243	42	32,194,000	1.00	32,194
32,194,000	.9060073	43	29,168,000	1.00	29,168
29,168,000	.8965990	44	26,152,000	1.00	26,152
26,152,000	.8861655	45	23,175,000	1.00	23,175
23,175,000	.8746494	46	20,270,000	1.00	20,270
20,270,000	.8619142	47	17,471,000	1.00	17,471
17,471,000	.8478049	48	14,812,000	1.00	14,812
14,812,000	.8322306	49	12,327,000	1.00	12,327
12,327,000	.8150401	50	10,047,000	1.00	10,047
10,047,000	.7959590	51	7,997,000	1.00	7,997
7,997,000	.7749156	52	6,197,000	1.00	6,197
6,197,000	.7516540	53	4,658,000	1.00	4,658
4,658,000	.7258480	54	3,381,000	1.00	3,381
3,381,000	.6974268	55	2,358,000	1.00	2,358
2,358,000	.6658185	56	1,570,000	1.00	1,570
1,570,000	.6312102	57	991,000	1.00	991
991,000	.5923310	58	587,000	1.00	587
587,000	.5502555	59	323,000	1.00	323
323,000	.5015480	60	162,000	1.00	162
162,000	.4506173	61	73,000	1.00	73
73,000	.3972603	62	29,000	1.00	29
29,000	.3448276	63	10,000	1.00	10
10,000	.3000000	64	3,000	1.00	3
3,000	.0000000	65	0,000	....	.....

Total of yearly instalments of contributions receivable.....\$3,547,005

EXHIBIT VI.

Years of Insurance.	Amount of Annual Contributions.	Present Value of \$1.00 Due n Years Hence.	Present Value of Yearly Instalments of Contributions.
(1)	(2)	(3)	(4)
1	\$181,452	1.000000	\$ 181,452.00
2	170,792	.961538	164,223.00
3	146,794	.924556	135,719.00
4	132,920	.888996	118,166.00
5	122,429	.854804	104,635.00
6	113,887	.821927	93,606.80
7	107,151	.790315	84,682.70
8	101,640	.759918	77,237.90
9	97,010	.730690	70,884.30
10	92,844	.702587	65,230.70
11	89,651	.675564	60,564.80
12	87,213	.649581	56,651.90
13	85,205	.624597	53,219.10
14	83,843	.600574	50,354.00
15	82,696	.577475	47,755.00—\$ 1,364,382.20
16	81,702	.555265	45,367.30
17	80,767	.533908	43,123.20
18	79,786	.513373	40,960.90
19	78,757	.493628	38,877.70
20	77,674	.474642	36,868.40— 1,569,579.70
21	76,534	.456387	34,930.10
22	75,332	.438834	33,059.30
23	74,062	.421955	31,251.90
24	72,720	.405726	29,505.40
25	71,302	.390121	27,817.40
26	69,801	.375117	26,184.40
27	68,213	.360689	24,604.50
28	66,532	.346817	23,075.20
29	64,754	.333477	21,594.80
30	62,874	.320651	20,161.40
31	60,889	.308319	18,773.90
32	58,795	.296460	17,431.00
33	56,589	.285058	16,131.80
34	54,271	.274094	14,875.90
35	51,841	.263552	13,663.30— 1,922,640.00
36	49,302	.253415	12,494.10
37	46,657	.243669	11,369.30
38	43,913	.234297	10,289.10
39	41,081	.225285	9,255.40
40	38,172	.216621	8,269.20
41	35,203	.208289	7,332.70
42	32,194	.200278	6,448.00
43	29,168	.192575	5,617.30
44	26,152	.185168	4,842.80
45	23,175	.178046	4,126.40
46	20,270	.171198	3,470.40
47	17,471	.164614	2,876.10
48	14,812	.158283	2,344.60
49	12,327	.152195	1,876.20
50	10,047	.146341	1,470.40
51	7,997	.140713	1,125.30
52	6,197	.135301	838.50
53	4,658	.130097	606.00
54	3,381	.125093	423.00
55	2,358	.120282	283.60
56	1,570	.115656	181.60
57	991	.111207	110.20
58	587	.106930	62.80
59	323	.102817	33.20
60	162	.098863	16.00
61	73	.095060	6.90
62	29	.091404	2.70
63	10	.087889	.88
64	3	.084508	.26
	\$3,547,005		\$2,018,412.94

FEASIBILITY OF EMPLOYING THE LAPSE FACTOR.

It is very reasonably contended that the immediate need of those who generally seek protection in fraternal orders is to bring within their means the contributions for sufficiently large benefits to support their families. To do this, it is argued that every advantage must be taken by which the rate of contribution can be reduced.

For illustration, it may be stated that the net annual level premium at age 35 for \$1,000 of protection according to the National Fraternal Congress Table of Mortality, is \$29.11, where the rate of mortality alone is considered. However, if it is assumed that three per cent interest can be earned on the excess contributions over current insurance cost, then the premium can be reduced to \$18.91. If three and one-half per cent interest be assumed, the rate of contribution need be only \$17.71, and with a four per cent interest assumption, the rate would be \$16.62. The higher the rate of interest, the greater the reduction in premium.

No one will deny the feasibility, practicability, or desirability of allowing for some interest earning in the computation of rates of contribution. The earnings from interest go to increase the accumulation, and avoid the need for the members to contribute so largely toward the principal of the required accumulation to maintain a level premium. The receipts from interest come from other sources than from the contributions of members for whose benefit these receipts are used.

On the assumption of three per cent interest earnings, there has been no hesitancy about applying that earning to an advance reduction of the rate of contribution from \$29.11 to \$18.91. If it can be assumed that a sufficient amount can be depended upon from forfeitures of withdrawing members to equal ten per cent of the contribution of persistent members, then why should not this amount be anticipated in the computation of premiums, and ten per cent at once deducted from the \$18.91 rate, the \$17.71, or \$16.62 rates?

It has been shown that mathematical computations can be made to include the lapse factor, on the same principle as when including the mortality and interest factors, when a lapse rate is given. And by assuming the lapse rate of a large society for entry age 35 the contribution rates have been computed and given in comparison with contributions where lapse is not considered. The percentages of decrease are as follows:

On 15-year term	4%
On 20-year term	5%
On term to age 70	9%
On whole life	10%
On limited pay to age 70	13%
On endowment to age 70	13%
On 20-limited pay	15%
On 20-year endowment	17%
On 15-year endowment	20%

The above reductions in contribution rates, for the several forms of certificates, were obtained upon the assumption of the same lapse rate under each form. This is not true. The lapse is very much larger on term than whole life certificates. Is larger on whole life without than with profit. Is larger on any whole life form than on endowment certificates. Hence if the lapse factor were employed, different rates would be necessary for different forms of contracts; otherwise the percentage reduction is exaggerated.

Admitting, however, that the introduction of the lapse factor would reduce the

contribution rate in anticipation of gains from forfeitures by lapse, then why not employ it in the computation of rates, even though necessitating different assumptions for different societies and for different forms of contracts in the same society.

A writer in a recent report on the experience of a prominent fraternal beneficiary society has strongly advocated the use of the lapse factor in premium calculations, and vigorously combats the general objections almost universally urged by actuaries against its employment.

It is well known that I take a different view of the lapse factor, and it is the present purpose to give the facts upon which I have based my conclusions. I have no partiality nor prejudice in the matter, and have no pet theory to sustain. The facts in the case have formed for me my opinion.

In the outset the acknowledgment is frankly made that no one can possibly foretell the actual mortality experience of any society. A fair estimate is the best that can be expected in advance. Notwithstanding such admission, I have not hesitated to advise the acceptance of some mortality experience as a basis for calculating rates of contribution which are to provide for definitely promised benefits.

It is freely admitted that no one can foretell the interest rate that can be earned on money during the next 20, 30, 40 or 50 years, nor can any one certainly predict that the funds will always be safely invested, and yet I have unhesitatingly recommended rates of contribution based upon a definitely assumed rate of interest, and upon the presumption that the funds could be securely invested and honestly handled.

In view of such acknowledgment and admission, why should I hesitate to assume some definite lapse rate, based upon some well authenticated experience, and introduce that into the calculation of premiums, as well as to use the other two uncertain factors of mortality and interest rates, to say nothing of the equally uncertain condition of safe investment.

The reason for recommending rates of contribution based upon assumed rates of mortality and interest, is because of the close, and usually accurate, estimate that can be made of future mortality experience and interest earning, and of the comparatively simple mathematical calculations involved in the use of these two factors.

The reason for questioning the advisability of the use of the lapse factor is because of (a) its uncertainty; (b) its variable and disappointing character; (c) its subject to control by the human volition; (d) its effect upon expenses; (e) its effect upon the reserve accumulation; (f) the complications incident to making an estimate of a future lapse rate from any past experience.

To indicate how uncertain it would be as a factor in computations, I submit the following rates of lapse per 1,000 members, at the given ages, for the societies mentioned:

If the lapse rate of the Ancient Order of United Workmen were assumed for the

Ages.	A. O. of F.	M. W. of A.	R. N. A.	R. A.	A. O. U. W.
20.....	95.0	165.7	86.4	38.7	116.9
25.....	65.8	126.6	62.4	33.4	158.7
30.....	44.8	81.6	42.7	27.8	103.1
35.....	30.1	56.7	25.0	24.0	79.6
40.....	17.9	43.1	25.2	20.2	59.5
45.....	10.4	32.9	21.4	16.2	43.8
50.....	6.1	15.3	15.4	12.7	27.7
55.....	3.6	5.7	7.6	9.3	12.6
60.....	2.6	2.7	....	6.2	8.5

Royal Arcanum, the resulting contributions would be insufficient, measured by the Royal Arcanum lapse rate. If the Royal Arcanum's past experience were assumed for that and other societies, the reduction in rates of contribution would be so insignificant as not to be worth consideration.

How would it be possible to construct any uniform schedule of rates that would conform to these varying rates of secession?

If there were an exhibit of a larger number of societies, the variance would be more striking, and the demonstration more complete of the impossibility of harmonizing the differences into a uniform rate of lapse suitable for the different organizations.

An analysis of the experience of each society would disclose a different rate of lapse in different localities and in different occupations. The difference due to different localities is well established by the following showing of lapse rates in several jurisdictions of the Ancient Order of United Workmen:

A. O. U. W. LAPSE RATE IN DIFFERENT JURISDICTIONS.

Ages.	N. Y.	Cal.	Mo.	Mass.	Pa.	Ga.
21	152.8	100.0	266.9	9.7	102.8	219.2
25	147.1	125.8	201.0	36.2	188.8	388.8
30	108.1	86.6	128.1	22.3	115.7	238.1
35	80.8	71.7	97.0	16.9	84.2	187.4
40	60.3	50.3	78.1	12.0	61.3	162.5
45	43.5	35.6	53.8	9.0	46.4	115.3
50	23.4	24.8	29.7	6.2	32.4	77.8
55	9.0	13.5	11.0	4.2	18.7	16.7
60	5.7	9.5	8.8	2.9	13.3	.....

The aggregate lapse rate for the thirteen jurisdictions, as given in the first table, would not fit any one of the above separate jurisdictions. It would simply be ruinous for Massachusetts, since the amount to be realized from forfeitures would not equal one-fourth of the assumed gains. The application of such a rate would bring the ridiculous result of throwing one of the best managed jurisdictions into the deficiency class.

The following from the recent experience of the Manchester Unity will emphasize the effect of locality and occupation, as grouped by its actuary:

MANCHESTER UNITY LAPSE EXPERIENCE PER 1,000 MEMBERS.

	Non-Manufacturing.			Textile.			Manufacturing (ex-Textile), Mining and Metropolitan.		
	Rural Lodges.	Urban Lodges.	All Lodges.	Rural Lodges.	Urban Lodges.	All Lodges.	Rural Lodges.	Urban Lodges.	All Lodges.
20	48.	74.	53.	28.	68.	57.	49.	85.	71.
25	38.	64.	43.	28.	63.	53.	38.	76.	63.
30	25.	39.	28.	22.	48.	40.	27.	55.	46.
35	17.	27.	19.	14.	33.	27.	25.	37.	33.
40	12.	16.	13.	12.	19.	17.	12.	20.	17.
45	9.	9.	9.	8.	12.	11.	8.	10.	9.
50	5.	4.	5.	3.	9.	7.	7.	9.	8.
55	5.	6.	5.	2.	8.	6.	5.	3.	4.
60	2.	1.	2.	2.	7.	5.	2.	3.	3.
65	3.	0.	2.	2.	2.	2.	0.	3.	2.

The foregoing statistics are from "aggregate" tables, and show the lapse rate at each age for all members at that age, without reference to their ages at entry or duration of membership. These statistics clearly demonstrate that the larger per cent of all lapses is at the low ages, and clearly prove that the material reduction in rates of contribution on account of lapses could only be made at the low ages, assuming that such statistics could be accepted as conclusive.

However, the above statistics from "aggregate" tables do not disclose nor discover all of the objections which can be urged against the use of lapse rate. When we investigate lapse experiences, as given in "select" tables, we find that the larger percentage of lapses not only occur at the young ages, but likewise in the early years of membership.

Of a given number who enter at age 20, many will lapse in the second year, until lapse virtually ceases after twelve or fifteen years of membership. Therefore, the members who entered at age 20 and attained to age 35 would become persistent, and the lapse rate among them would not compare with the lapse rate among members in their first year of entry at age 35.

To instance: The lapse rate of members, who entered at age 20, in the fifteenth year of membership, at age 35, by the Modern Woodmen experience, was eight in the 1,000. The lapse rate of members who entered at age 35, in the first year of membership, was 93 in the 1,000. The "aggregate" lapse rate for all members at age 35 is shown to be 57 in the 1,000.

Assuredly no one will contend that accurate results can be obtained from grouping together persons of the same attained age with such a wide difference in rate of lapse. This, however, is done when "aggregate" tables are used. To use "select" tables would be impracticable, because of the complications introduced into the calculation of rates of contribution.

Some one may say that "select" tables also show different death rates for the fifteenth year of members who entered at 35. That is true. The Woodmen experience shows a death rate for members who entered at 20, in their fifteenth year of membership, at attained age 35, of eight in the 1,000; while for members who entered at 35, in the first year of membership, it shows three in the 1,000. The "aggregate" death rate for all members at age 35 is six in the 1,000.

It is also true that when the "aggregate" lapse rate is lower than the "select" rate for any age, say at 35, it would give a schedule of assessment rates, deduced therefrom, on the side of safety.

While that is true, it must be remembered that the rate of lapse rapidly falls off after the second year of membership, the effect of which is only partially disclosed in the "aggregate" table, and there must result an error in calculations which will be cumulative in character and ultimately end in trouble. The Modern Woodmen experience is conveniently at hand, and since it is similar to all other experiences which have come under my observation, I give the lapse rate and death rate of that Society by membership years, from one to fifteen, for the following sample entry ages (members not admitted above age 45):

As before intimated, it might be argued that wrong results would as likely proceed from the use of "aggregate" mortality tables as from the "aggregate" method in determining lapse rate, for it is seen that the death rate persistently tends to increase with the years of membership in somewhat the same ratio to the decrease in the lapse rate with duration of membership.

However, it has been found perfectly feasible and absolutely safe to allow for this increase in death rate, and to avoid the effect of the medical selection during the

M. W. OF A. LAPSE AND MORTALITY EXPERIENCE PER 1,000.

Years of Ins.	20.		25.		30.		35.		40.		45.	
	Lapse Rate.	Death Rate.	Lapse Rate.	Death Rate.	Lapse Rate.	Death Rate.	Lapse Rate.	Death Rate.	Lapse Rate.	Death Rate.	Lapse Rate.	Death Rate.
1	184.	3.25	157.	3.06	126.	2.61	93.	3.02	85.	3.39	66.	2.91
2	180.	4.23	144.	3.01	109.	3.39	85.	2.92	68.	3.71	63.	5.27
3	129.	4.24	101.	3.44	72.	4.00	57.	4.69	48.	3.84	32.	6.39
4	97.	3.82	72.	3.74	51.	3.13	39.	5.27	34.	2.28	24.	6.53
5	68.	5.79	52.	3.51	39.	4.83	26.	4.56	23.	6.23	17.	7.09
6	55.	6.09	39.	4.59	30.	2.81	24.	4.94	16.	5.60	11.	8.44
7	40.	6.43	31.	5.49	24.	4.82	18.	4.66	13.	6.92	13.	8.20
8	42.	5.52	21.	4.53	17.	5.82	17.	5.34	12.	8.12	8.	8.85
9	32.	4.04	17.	4.27	19.	5.38	12.	5.43	9.	7.36	6.	9.04
10	21.	1.47	12.	4.63	14.	6.27	10.	5.75	7.	9.71	8.	15.82
11	26.	3.98	9.	3.59	9.	4.17	14.	6.25	6.	10.85	6.	7.83
12	12.	5.95	7.	2.45	10.	2.55	7.	8.56	5.	8.99	5.	20.98
13	4.	3.58	13.	7.34	5.	8.43	4.	4.84	4.	6.67	....	10.96
14	14.	4.65	3.	4.00	8.	4.35	9.	6.20	5.	11.58	5.	15.58
15	8.	8.06	2.	8.21	5.	9.38	12.	11.73	3.	14.64	2.	15.70

NOTE.—The above disproves the oft repeated statement that more deaths occur in the earlier than later years of insurance. General experiences of other societies are similar to that of the Woodmen.

first few years of membership by excluding the experience of the first five years, when the effect is most pronounced. After this is done, the subsequent "adjustment" further relieves the mortality table from the objections mentioned. Further than this, the conservative management and cautious actuary will then adopt some standard mortality table as a basis for rates, which is even higher than this adjusted table representing the experience of the society in question.

It may be said that the same conservative and cautious course could be adopted in respect of the lapse rate. Assuredly it could; but the result would be to make the reduction in rates of contribution so triflingly small that no one would go to the trouble and expense of introducing the lapse factor into premium calculations.

The only tenable argument to be made in favor of considering the lapse element is that material reduction may be had in rates of contribution, in order to bring them within the financial ability of poor men. If, when on the safe side, the lapse rate is so low as to make insignificant reduction in contributions, then there is no sufficient reason for introducing this lapse factor to complicate the calculations and disturb the regular reserve values.

The uncertain and variable nature of the lapse rate is clearly established from the lapse experience of life insurance organizations, and it would appear impossible to settle upon any uniform schedule of assessment rates when the lapse factor enters into their computation.

If the lapse element is to be considered, evidently each society must be largely, if not altogether, controlled in that consideration by its own experience. It would be extremely hazardous for a society to rely upon the experienced lapse rate of some other society.

The fact of remaining with or withdrawing from a society is determined by individual volition, and the moving cause for the exercise of human volition would be impossible to predict by any previous record of its exercise.

With the representative form under which the societies generally operate, the cause might come from political influences or from disagreement between officials, or

from the pernicious activity of agents and representatives of other organizations, or from any one or more of a hundred influences which could operate upon the human will—a thing notoriously fickle, changeable, and unreliable.

If each society reduced its rates of contribution in an amount justified by its own experience, there would be no uniformity in the resulting schedules. A reference to the lapse rate of the Royal Arcanum and the Ancient Order of United Workmen, as examples, will indicate the resulting difference in the rates of reduced contribution.

Were the societies to put out varying schedules, there would be no end of misrepresentation to the public.

As a practical proposition, it would seem advisable and preferable to agree upon a uniform schedule of rates without considering the lapse element, and then let each society return to its members, in optional form, the gains from forfeitures after they are realized through actual withdrawals.

If the return is to be in the way of reducing rates of contribution, the amount from forfeitures could be divided, at the end of each year, and the contribution of each persistent member reduced by his proportionate share.

By this method the reduction would be *after the fact*, and there would be no possibility of upsetting calculations by creating deficiencies, as under the method of making the reductions beforehand upon guess and estimate.

The persistent member would receive the same advantage of lapses, and those who object to surrender values should be satisfied. Each society would stand upon its own record, as it should do; the members of each would receive all possible benefit from forfeitures, because they would share in a division of all the gains from that source, and more than that they could not have, even though an over-estimate promised more; withdrawing members would receive no part of their accumulation, and, therefore, would be punished for seceding; and so all of the conditions would be fulfilled that are anticipated by those who would risk the danger of estimated and assumed reduction *before the fact*.

I desire it to be distinctly understood that I have no prejudice against using the lapse in constructing tables from which to derive insurance values and premiums. I simply have no confidence in the reliability of such tables, because I can find no statistics that will justify such confidence.

I do not believe in laying down any hard and fast rule and undertaking to apply it to all cases of readjustment of existing rates of assessment. The conditions of societies are widely different in respect of methods of management, plans of operation, character of membership, and original rates of contribution. Hence the necessity of a careful investigation of the affairs of each organization before deciding upon the best method for readjustment.

It is well known that I advised the Readjustment Committee of the Modern Woodmen of America to ignore the lapse element in the preparation of rates. However, the members of that society had become so accustomed to very low rates of contribution that they protested vigorously against the schedules proposed by the Readjustment Committee, and, at the suggestion of the Head Consul, I prepared another schedule with the lapse factor considered. This schedule was offered to the Head Camp by Delegate Young, under the name of the "Hawes Plan" as a substitute for the committee's rates. But the representatives of the Modern Woodmen of America were not willing to accept the concession, and did what so many

other similar bodies have done, adopted a makeshift, devised on the spur of the moment by those wholly ignorant of the true relation between promised contributions and promised benefits.

In such an emergency as that in which the officials of the Modern Woodmen of America were placed, during the desperate struggle to put their society upon a sound basis, I could favor the trial of rates reduced by an estimated gain from forfeitures through lapse.

I would *advise* against any such estimate. I have endeavored to support my opinion by facts in reference to lapse rates experienced by different organizations, and by reference to opinions of the leading actuaries on both sides of the Atlantic. It seems to me that the almost unanimous conclusion of the experts should satisfy us that resort should only be made to the use of the lapse element in those cases of revision of assessment rates where excessive loading is necessary to provide for deficiencies of existing old members. It were as well to ignore expert advice altogether as to fly in the face of an almost universal opinion against consideration of the lapse element in premium calculations.

I cannot dismiss this part of the discussion without quoting the following from Mr. George King's lecture, "Facts, Fallacies and Fancies in Life Insurance":

"The company which takes account of discontinuances in calculating its premiums, requires to make—and I can prove it by mathematics—a considerably higher reserve than a company charging the ordinary level premiums. Therefore it is utterly fallacious for assessment or natural premium officers to argue that because they trust to discontinuances they do not require large reserves. A premium calculated to allow for discontinuances is naturally lower than the premium calculated for mortality only, because the surrender values of the policies which it is assumed will lapse are applied in reduction of premium. Now it is found that discontinuances take place in great proportion in the early years of the policies, and that when policies have been in existence, say ten or fifteen years, discontinuances practically cease. All the discontinuances take place in the early years, and when a man has kept up a policy for a certain time he keeps it up to the end. Now, the premium being lower than the ordinary level premium, and the risk being the same, and the premium being part of the assets relied upon by the office in order to meet the claim, it follows that the other part of the assets—namely, the reserves—must be increased. So that if the premium is reduced by the application of lapses, to lower the premium, then the reserves, on the other hand, must be increased, so as to get a perfect balance between the liabilities and assets. Now by these simple considerations you can see that a company which trusts to discontinuances in order to reduce its rates must, if it is to remain permanently solvent, make larger reserves than a company which charges the ordinary premium based upon mortality only."

EXAMPLES OF DISCOUNTED RATES.

I now come to that part of my presentation which should especially hold attention, because it deals with the practical side of the subject, as it directly relates to that ever-existing condition of securing and losing members, and the expense of field work, with some bearing on the effect of competition. To immediately get at the pith of the matter, I present a number of schedules of level annual premiums on the basis of mortality alone, and on the basis of mortality and lapse considered. Only a few sample ages are given:

Age.	A. O. U. W. (By Eldridge.)		P. H. C. (By Barnard.)		I. O. F. (By Rea.)	
	Without Lapse (Net.)	With Lapse (Net.)	Without Lapse (Net.)	With Lapse (Net.)	Without Lapse (Gross.)	With Lapse (Gross.)
25	\$13.68	\$ 9.69	\$12.48	\$10.20	\$12.03	\$10.90
30	15.06	9.40	14.64	12.00	14.29	13.16
35	19.00	11.58	17.40	15.00	17.37	16.08
40	22.95	14.21	21.12	18.60	21.70	20.36
45	28.16	17.29	25.92	24.00	28.00	26.81
50	.....	.....	32.52	31.20	37.66	35.96

Age.	ILLUSTRATIVE (By I. P. Mantz.)		ILLUSTRATIVE (By Hunter.)		M. W. of A. (By Landis.)	
	Without Lapse (Net.)	With Lapse (Net.)	Without Lapse (Net.)	With Lapse (Net.)	Without Lapse (Net.)	With Lapse (Net.)
25	\$11.91	\$10.32***	\$16.25	\$14.56**	\$12.48	\$11.64*
30	13.96	12.08	.....	.....	14.64	13.56
35	16.62	14.47	.....	.....	17.40	16.20
40	20.11	17.41	25.89	23.66	21.12	19.80
45	24.72	21.88	.....	.....	25.92	24.60
50	30.91	26.82	.....	.....	32.52	32.52
55	39.36	34.37	59.87	55.25	.....	.....
60	51.13	45.96	.....	.....	.....	.....

NOTE.—***These rates are based upon a mortality rate according to the National Fraternal Congress Table, and upon lapse ratios reported to the nineteenth M. U. B. A. convention. **Double lapse rate here considered. With normal lapse rate, the premiums given by Mr. Hunter were, age 25, \$15.48; age 40, \$24.83; age 60, \$57.64. *Seventy-two cents were added to these rates at each age to 48 years of age, the same being a "fraternal rate" to maintain a level premium of \$30.00 annually for existing members above 48 years of age. In consequence, the premiums offered with lapse were nearly the same as the regular net premiums without lapse. The effect of lapse was not considered above age 47.

The reduction made by Mr. Eldridge for the Ancient Order of United Workmen, from the rate without lapse, is very considerable, because the withdrawals from that society were very great prior to 1896, before the old classified plan was adopted. The lapse experience investigated by Mr. Eldridge was prior to 1896.

The reduction from regular rates made by Mr. Barnard for the Protected Home Circle is likewise considerable. Mr. Barnard, in his report to the society, does not give the basis for his modification, but it is presumed that he followed the suggestion made by Mr. Whiting some years ago. When the rates were prepared for the Protected Home Circle, unfortunately the lapse experience of the society was not available, and hence it cannot be known whether or not the reduction or modification accords with that experience.

Mr. Rea and Mr. Pipe based the regular and reduced rates of the Independent Order of Foresters upon the actual experience of that society, and the reduction is not very great.

Mr. Hunter worked out sample rates for illustration, as was also the case of Mr. Mantz. The former took the Hm Table of Mortality and double the normal lapse, and the latter used the National Fraternal Congress mortality and the lapse ratios of the Mutual Underwriters Benefit Associations. Mr. Landis used the National

Fraternal Congress rates and discounted them on the basis of the Modern Woodmen twenty years' experience.

The results of these several efforts reflect what might be expected in the way of variety were all of the societies of America to have rates prepared with lapse element considered.

The results certainly show that it would be impossible to secure a uniform schedule for all of the societies. We must picture the situation from the standpoint of a variety of schedules. Then what would be the practical effect of them?

First. Each society would be forced to make out special reserve values, base their valuations on specially prepared tables, or value upon standard tables modified.

Second. Each society would be compelled to have its affairs so managed as not to have a lapse rate lower than assumed, and hence the officers could not exert themselves to the utmost to prevent secessions, but might be forced to cause lapses should the members be possessed of an extra confidence beyond that assumed for them.

Third. The great reduction in rates, like those of Mr. Eldridge for the Ancient Order of United Workmen, and Mr. Barnard for the Protected Home Circle, would require a heavy lapse rate, and in time would require strenuous activity in the field in order to replace withdrawing members by new ones to prevent a net loss in membership and ultimate dissolution. This strenuousness would call for the sinews of war in the shape of more money for extension purposes. This increased demand for expense funds would offset the gains from forfeitures, and the management would soon be brought to face a deficiency, or be forced to ask for an increase in the expense contributions equal to the reduction in net mortality premiums, with the result that the society would have rates equal to the regular premiums without lapse but with all of the advantages of surrender values. The management could not seek relief in preventing lapses, beyond the number assumed, because that would invite insolvency. The management must secure enough new members to make good those going out by lapse and death, and some additional for healthy growth, otherwise the society would go into decay. If any one can work out an advantage from the assumption of a high lapse rate in order to obtain low net premiums, it is more than is indicated in this presentation, and more than I can see from a practical view of the situation.

THE INSURANCE RISK.

The mortality table enables the actuary to determine the risk to death assumed by the society on the insured life, which is an increasing risk with increasing age.

But there are conditions other than age which affect the risk, such as occupation, residence and the period of promised protection.

The added contribution necessary to provide for the extra occupation and residence risk is omitted from consideration in the first computation to obtain the rate for the death benefit as an ordinary risk. The extra required contribution is separately determined.

But the period of protection must be considered in the first instance, and only that portion of the mortality table is employed which corresponds to the period covered by the protection from age of entry to the terminating age.

The society's risk may be increased also by the addition of other than death benefits. The promise may include claims on account of accidents, or sickness, or old age, the inclusion of any one of which will require an extra contribution over that for a death benefit only.

To provide for accident benefits a level and equal rate for all ages is usual. And most of the American companies have a level and equal premium to age 50 for health (or sickness) benefits, and a somewhat higher equal rate for ages above 50. However, the sickness rate increases with increasing age, and the companies only save themselves from the troubles which have come to the Friendly Societies by reserving the right to cancel contracts at their option.

Recently much interest has been taken in Total Permanent Disability Benefits, and I have given tables in respect of them. In 1903 I obtained the first American Disability Experience from the Knights of the Maccabees of the World and other Societies, and from the data constructed the first Total Permanent Disability Tables. Since that time I have furnished the statistics to other actuaries who have prepared from them elaborate tables in connection with the American Experience Table of Mortality.

For contribution rates for sickness benefits, other than for one-year renewable term contracts, the Manchester Unity or Sutton's Tables are employed.

The day has passed when *guessing* should be resorted to in the matter of contributions adequate to provide for promised benefits.

Mortality, Sickness and Total Permanent Disability Tables are well established and, at moderate cost, any insurance organization can have computed contribution rates for any character of insurance protection.

VARYING BENEFITS.

Not only can level contribution rates be computed for a uniform benefit, but the tables enable the actuary to determine the rate for increasing or decreasing benefits.

In all cases, *at the inception of the insurance contract*, the present value of the future contributions must be equal to the present value of the promised benefits.

Equity requires and solvency demands this condition.

The simplest form of contract in respect of assessments is the case of the level and uniform contribution rate graded to ages when the payments commence and for a uniform benefit payable at death.

From Exhibits 1 and 2 it is demonstrated that the Present Value of the Promised Benefit is equal to the Present Value of the sum insured and is equal to the Single Payment to provide for the Yearly Instalments of Claims.

From Exhibits 1 and 2 it is demonstrated that, at the inception of the insurance contract, the future contributions to provide for the Yearly Instalments of Claims, is equal in value to the Single Payment and is equal in value to the Promised Benefit, and that the Present Value of the Annual Contribution is obtained from its multiplication by the Whole Life or Temporary Annuity.

I have avoided symbols, but for the sake of brevity occasionally they must be used.

A = The Single Payment,
 = Present Value of Sum Insured.
 a = Present Value of an Annuity,
 = Present Value of \$1.00 Paid Annually.
 P = Level Annual Premium,
 = Level Annual Contribution.

Then commit to memory the following equations and we will have ended the first lesson:

$A = P \times a$,
 = Present Value of Promised Benefits,
 $P = A \div a$,
 $a = A \div P$,
 $P \times a = A$, = Present Value of Future Contributions,
 = Present Value of Promised Benefits,

AT THE INCEPTION OF THE CONTRACT. Note well that the above equations are true, under adequate rate schedules, at the moment the insurance contract is made, *but may not hold true in any subsequent year. After the first contribution payment, the present value of future contributions is less than the present value of the promised benefit, and reserve accumulation is required to make good the difference, as later will be explained.*

In Exhibits 1 and 2 the arithmetical process to obtain A and a is clearly and in great detail set forth, both on the whole life and on the temporary or term basis, and in respect of death benefit only and of combined death and endowment benefits.

In all of the cases mentioned the foregoing three equations hold true.

And further:

$$A = \text{The Benefit Side,}$$

$$P \times a = \text{The Payment Side}$$

of the Level Premium Insurance Contract, and *at the inception of this contract*, the Benefit Side must equal the Payment Side, and this rule holds in all cases.

Instead of the Benefit being for a uniform amount as assumed in Exhibit 1, suppose that the promise is to pay \$700 in the first year, \$800 in the second year, \$900 in the third year and \$1,000 thereafter, thus having a *varying* in place of a *uniform* benefit. Then how would we determine its Present Value?

The process is identical with that for finding A when the benefit is \$1,000 from the beginning of the insurance. Thus:

Beginning of Years.	Number Living Beginning of Years.	Amount of Certificate.	Total Protection.
1	92,215	\$ 700	\$64,550,500
2	91,648	800	73,318,400
3	90,070	900	81,063,000
4	90,479	1000	90,479,000

After the completion of the third year the protection is on the basis of \$1,000 and the total for each year is 1,000 times the number living as found in the mortality table. So also the yearly instalments of claims after the third year is 1,000 times the number dying as given in the mortality table and also in Exhibit 1.

The instalments of claims must be determined from multiplying the total protection by the probability of dying. Thus:

Beginning of Years.	Total Protection.	Probability of Dying.	Instalment of Claims.
1	\$64,550,500	.0061487	\$397,000
2	73,318,400	.0063067	462,000
3	81,063,000	.0064895	526,000
4	90,479,000	.0066977	606,000

Where the protection begins with \$1,000 the total protection is \$92,215,000, and the first year's instalment of claims is \$567,000. When the protection begins at \$700, the total is \$64,550,500 and the first year's instalment of claims is \$397,000, with similar reductions in the second and third years.

After the third year the instalments of claims obviously are the same as in Exhibit 1, since the basis is \$1,000 for each person.

To find the Present Values of the Instalments, we adopt the identical procedure as for Exhibit 1. Thus:

Beginning of Years.	Yearly Instalments of Claims.	Present Value of \$1.00.	Present Value of Claims.
1	\$397,000	.961538	\$381,630.00
2	462,000	.924556	427,510.00
3	526,000	.888996	467,650.00
4	606,000	.854804	518,010.00

The succeeding years to the end of the sixty-fourth year would be identical with Exhibit 1. But the total of the claims would be \$91,864,000, instead of \$92,215,000, and the total of their Present Values is \$27,490,473.44, instead of \$27,818,663.44.

However, the Number Living at the Beginning of Years would not be changed by the fact that each person received less than \$1,000 of protection during the first three years of membership, and the amount of yearly instalments of contributions of \$1.00 at beginning of years by each person living would not be changed, and hence Exhibit 2 would remain unchanged.

Therefore, we would have the same total of Present Values of Contribution Instalments, \$1,674,337.74 as the divisor into \$27,490,473.44 (the reduced total of Present Values of claims), giving \$16.42 as the Level Annual Contribution Whole Life Rate at age 35, where \$700 is paid at death in the first year, \$800 in the second, \$900 in the third, and \$1,000 thereafter.

The Level Annual Whole Life Rate is \$16.62 when \$1,000 is payable in all years. The scaling of \$300 in the first year, \$200 in the second, and \$100 in the third reduces the annual rate by 20 cents.

If the protection began at \$700 in the first year and increased by a given amount each year to the end of "Life Expectancy," say by the uniform amount of \$10, then we would multiply the "Number Living" at the beginning of the first year by \$700; at beginning of second by \$710; of the third year by \$720, and so on for thirty years, until the amount equaled \$1,000. The protection thus obtained would be multiplied by the "Probabilities of Dying" to get the Yearly Instalments of Claims, and the latter would be multiplied by the interest discount factors to secure the Present Values, the total of which would be divided (for age 35) by \$1,674,337.74 to obtain the Level Annual Contribution Rate.

The varying benefit only affects the construction of Exhibit 1. The annuities obtained from Exhibit 2 remain unchanged. When the benefit is less than the unit of \$1,000, the resulting total of Present Values is less as a dividend, and, of course, the quotient is less as an annual rate.

The reduction in the rate by giving less than \$1,000 during "Life Expectancy" is much exaggerated, as an example would prove.

If there were a *decreasing* instead of an *increasing* benefit, the process to find the yearly instalments of claims and their present values would be identical with that shown for increasing benefits.

The annual contributions for Term, Limited Pay and Endowment varying benefits could be obtained by use of temporary single premiums as explained for Exhibits 1 and 2.

VARYING CONTRIBUTIONS.

Suppose the rate of contribution is to increase or decrease for a number of years, then how can such a varying annual contribution rate be determined?

The simplest demonstration of the process is to employ the equation

Benefit Side=Payment Side, or

$$A=P \times a.$$

But P is to vary from year to year, say, for three years. Then let P' be the initial contribution and that it be increased by 2 for three years and afterward remain level.

P', being the initial rate, must be paid through the period of protection, and obviously its value is

$$P' \times a.$$

The first increase at the end of the first year is 2, which must be paid through the period of protection, beginning the second year. Obviously the present value of this first increase is 2 multiplied by the present value of \$1.00, paid annually, beginning the second year.

Similarly the second increase in the rate by 2 is made at the end of the second year and its present value is 2 multiplied by the present value of the annuity of 1, beginning the third year.

Likewise the present value of the third increase of 2 is the product of its multiplication by the annuity, beginning the fourth year.

Let ${}_1|a$, ${}_2|a$ and ${}_3|a$ stand for the value of the annuities deferred one, two and three years. Then the equation becomes

$$A = P'a + 2 \times {}_1|a + 2 \times {}_2|a + 2 \times {}_3|a,$$

with the last three terms discounted one, two and three years.

Let v^1 represent the value of \$1.00 discounted for one year; v^2 =discounted value for two years, and v^3 =discounted value for three years. Then the equation becomes,

$$A - [v^1(2 \times {}_1|a) + v^2(2 \times {}_2|a) + v^3(2 \times {}_3|a)] = P' \times a.$$

dividing through by a, we have

$$P' = \frac{A - [v^1(2 \times {}_1|a) + v^2(2 \times {}_2|a) + v^3(2 \times {}_3|a)]}{a}$$

For age 35 we found (from Exhibit 2) that a (the whole life annuity single premium) was \$18.16.

${}_1|a$ would be the single premium for the whole life annuity at age one year hence, or age 36, and it could be found by constructing a table for age 36 similar to Exhibit 2 for age 35.

Also ${}_2|a$ and ${}_3|a$ represent annuities beginning two and three years hence, or at ages 37 and 38, and could be determined by a process similar to that illustrated by Exhibit 2.

The single premiums for whole life annuities at ages 36, 37 and 38 are \$17.95, \$17.94 and \$17.53, respectively.

The values of \$1.00 due one, two and three years hence (discounted at 4 per cent) are .961538, .924556 and .888996, respectively.

We have already found that A_{35} (the single premium for the purchase of \$1,000 promised death benefit) was \$301.68.

Substituting, the equation becomes,

$$P' = \frac{301.68 - .9615(35.90) + .9246(35.48) + .8890(35.06)}{18.16} = \frac{301.68 - 98.50}{18.16} = \$11.19 \text{ equal the initial}$$

contribution at age 35, and when increased by \$2.00 for three years would give the level annual rate after three years (\$11.19 plus \$6.00), or \$17.19. And this instead of \$16.62 as the level annual rate from the beginning.

The employment of temporary single premiums for annuities, as explained in connection with Exhibits 1 and 2, will enable the computer to obtain increasing or decreasing contribution rates for term, limited payment and endowment contracts.

The foregoing tedious details are excusable only for the reason that they are made for those who want arithmetical examples of the method of computing contribution rates.

They are presented with the hope that the simplicity of the illustrations will dispel the common fallacy concerning "Life Expectancy" as a factor entering into the computation of level annual contribution rates.

SHORT CUTS OF CALCULATIONS.

To follow the method of computation illustrated in the Exhibits and explained for varying benefits and contributions would require the extended columns for each age of entry as shown for age 35.

Short cuts in the way of "Commutation Columns" have been devised, and the understanding of them appears to be a serious difficulty with those who are not expert mathematicians.

I will try to make a simple explanation of their construction and use.

Refer to Exhibit 1 and note that the first thing is the determination of the "yearly instalments of claims" expected to mature during the period of protection. The actual process is better illustrated by Exhibit 3, when the yearly instalments are not the tabular number dying as given in the mortality table.

The second process is to obtain the present value of the yearly instalments of claims, which is accomplished by multiplying the amount for each year by the present value of \$1.00 discounted for one, two and so forth years.

In the illustrations the value of \$1.00 due one year hence is the multiplier for the first year's instalment of claims.

Instead of using this as the first discount factor to form the first "commutation column," designated C_x , we take the value of \$1.00 due one year after the year represented by the age for which the computation is to be made. We do this because, for convenience, it is assumed that $C_x = d_x v^{x+1}$. In other words the value for C for any age as x is equal to the product of the number dying at that age by the present value of \$1.00 due in a period of time one year greater than age x .

That is to say, from Exhibit 1 for age 35 we would take the value .243669, opposite the year 36, instead of .961538, opposite the year 1.

Beginning with the youngest age given in the mortality table (age 20 for the N. F. C.) we would take the value of \$1.00 due the year hence represented by the age one year older than the youngest (or in 21 years) as the multiplier to represent the claims maturing in the first year of age, and thereafter successively use the corresponding present values of \$1.00 and yearly instalments of claims to the end of the mortality table.

Turn to Table II of the Appendix.

In the first column, headed x , are the ages.

In the second column, headed v^x , are the present values of \$1.00, the first being the value 20 years hence, .456387, and is the same as used in the exhibits for the twentieth year.

In the sixth column, headed C_x , are the amounts corresponding to the present values of the yearly instalments of claims *on the basis of 1.00 instead of 1,000*.

That is to say, the first value of C_{20} (219.416801) is the product of 500 (the number dying at age 20) by 1.00 (the unit of benefit) by .438834 (the present value of 1.00 *twenty-one years hence*).

This value of C_{20} corresponds to the present value of the instalments of claims in Exhibit 1, except, as stated, the promised benefits are on the basis of \$1.00 for each death instead of \$1,000.

In Table 1 of the Appendix, the third column, headed d_x (number dying), gives the number of tabular deaths during each year of age, and these multiplied by \$1.00 will give the yearly instalments of claims on the assumption of paying \$1.00 at each death.

Multiplying each of these yearly instalments of claims by the value of \$1.00 for the year one age advanced, the amounts corresponding to the present values of the claims are obtained as given in column C_x of Table 2, which are of identical character to those obtained for ages 35 to 98 of Exhibit 1, excepting as to the unit of protection as heretofore explained.

If we take the total of the values in the C_x column of Table 2 from any given age, this total can be used to obtain the single payment to provide for the promised benefits at that age, in a similar manner to that of finding the single premium for the protection at age 35 in Exhibit 1.

However, by summing the C_x column of Table 2 from the oldest to the youngest age, and recording the subtotals for intervening ages, at once the total for any given age is obtainable. Thus:

The oldest age is 98 and the present value of the claims expected to mature in the last year of age is .061776. Starting with that value, the process would be (omitting the sixth decimal):

Value at 98 of C_x .....	.06178 = M_{98}
Value at 97 of C_x .....	.14991
Total at 97 of C_x .....	.21169 = M_{97}
Value at 96 of C_x .....	.42317
Total at 96 of C_x .....	.63486 = M_{96}
Value at 95	1.01918
Total at 95 of C_x	1.65404 = M_{95}

and similarly to the youngest age 20. The sum of the values of C_x are recorded in the seventh column of Table 2 under the title of $M_x = \Sigma C_x$ (Σ is the Greek letter sigma, and stands for "summation").

The number 9669.13897, opposite age 20, is the total of the numbers in column C_x from 20 to 98, inclusive.

The number 7049.68360, opposite age 35, is the total of the numbers for ages 35 to 98 in column C_x . And similarly for other numbers in column M_x , they are the respective totals for the opposite ages to the end of the Mortality Table, and correspond to the total for age 35 to 98 in Exhibit 1.

Now assuming that each person living, given in column 2 of Table 1, paid \$1.00 at the beginning of the year (precisely as done in the illustration by Exhibit 2, but commencing at age 20 instead of 35), we form a column of yearly instalments of contributions, as in Exhibit 2.

The first payment at age 20 by the 100,000 living would give immediately \$100,000.

In Exhibit 2 the 92,215 persons living at age 35 paid \$92,215 immediately, and it was entered at its face value of \$92,215 in the column of present values of yearly instalments of yearly contributions, because it was in hand at the beginning of the insurance.

But the treatment is now changed by the employment of the present values of \$1.00 for years corresponding to years of age.

Therefore, instead of multiplying \$100,000 by 1.00, we multiply by the value of 1.00 twenty years hence, or .456387, as given in the column v_x of Table 2, opposite the year 20 in Exhibit 1.

The product, to six decimal places, is given in column D_x of Table 2, being $45638.694620 = D_{20}$.

The column D_x of Table 2 corresponds to the column of Present Values of Yearly Instalments of Contributions of Exhibit 2. The only difference being in the fact that the yearly instalments of contributions are multiplied by the present value of \$1.00 for the year equal to the insurance age instead of the year of insurance duration.

At this point it is well to observe that in the Tables of Values a unit of 1 is taken for the amount of contribution, and hence denominations of dollars and fractions thereof are omitted or understood.

For this reason the number living (designated by l_x) are taken as the multipliers instead of the amounts of \$1.00 by the number living. Thus at age 20 the number living is 100,000, and multiplied by the present value of 1 in the twentieth year would be, as stated, 45638.69462.

The present value of 1 is designated by v ; and where the value is taken as of the insurance age (x) then it is designated v^x .

The number living is designated by the letter l , and for the number at any insurance age a suffix is added for the given age, as l_{20} for the number living at age 20; and, therefore, l_x is used for a general designation of the column of the number living.

When the number living is multiplied by the present value of 1, the *general expression* for the product is $l_x v^x$ which is further designated by D_x for convenience and brevity.

Similarly, the number dying is designated by the letter d . For a given age, as d_{20} . And generally, d_x .

Omitting monetary considerations and making the insurance unit 1, then we obtain the present value of the yearly instalments of claims by using the tabular number dying.

As before stated, we take the present value of 1 for the year one year advanced in age as the multiplier. Therefore, for age 20 we have 500 multiplied by .438833602, giving 219.416801, being $d_{20} v^1 = C_{20}$. And generally, $d_x v^{x+1} = C_x$.

Returning to the discussion of the column D_x of Table 2, which corresponds to the present value of yearly instalments of contributions, the total of the column for any age can be used to obtain the single premium for an annuity, similar to the use of the column of present values of contributions in Exhibit 2.

In a manner similar to that heretofore shown for summing the C_x column, we may sum the D_x column of Table 2 from the oldest to the youngest age and, recording the subtotals for intervening ages, at once obtain the total for any given age. Thus:

Value at 98 of D.....	.06425 = N_{98}
Value at 97 of D.....	.22272
Total at 97 of D.....	.28697 = N_{97}
Value at 96 of D.....	.67173
Total at 96 of D.....	.95870 = N_{96}
Value at 95 of D.....	1.75856
Total at 95 of D.....	2.71726 = N_{95}

and similarly to the youngest age 20. The sum of the values of D_x are recorded in the fourth column of Table 2 under the title of $N_x = \Sigma D_x$.

The totals in the N_x column represent the

Payment Side

of the insurance contract, because they are derived from expected yearly instalments of contributions.

The totals in the M_x column represent the

Benefit Side

of the insurance contract, because they are derived from the expected yearly instalments of claims for benefit.

To obtain the level annual contribution rate for any age it is only necessary to divide the number in the M_x column by the number in the N_x column opposite the given age. Thus:

$$\begin{array}{rcc} \text{Benefit Side} & \text{Payment Side} & \text{Annual Rate} \\ 7049.68360 & \div 424294.62475 & = .01662 \\ M_{35} & N_{35} & P_{35} \end{array}$$

If the result is desired on the basis of \$1,000, multiply by 1,000, and we have $1,000 P_{35} = \$16.62 = \text{Annual Rate}$, which is identical with the result obtained from Exhibits 1 and 2 for the whole life level annual contribution to provide a death benefit of \$1,000.

The same principle obtains in the use of the M_x and the N_x columns to secure the level annual contribution for term or limited Payment or Endowment Insurance contracts. Thus:

$$\frac{\text{Benefit Side}}{(M_x - M_{x+20})} \div \frac{\text{Payment Side}}{(N_x - N_{x+20})}$$

gives the level annual contribution rate for an insurance of 1 for a term of twenty years. In figures taken for age 35 from the M_x and N_x columns of Table 2, we have

$$\frac{\text{Benefit Side}}{(7049.68360 - 4477.07072)} \div \frac{\text{Payment Side}}{(424294.62475 - 113737.21570)}$$

$$\frac{M_{35}}{M_{55}} \div \frac{N_{35}}{N_{55}}$$

The annual contribution for a term to age 70 would be

$$\frac{\text{Benefit Side}}{(7049.68360 - 2232.70894)} \div \frac{\text{Payment Side}}{(424294.62475 - 24269.33480)}$$

$$\frac{M_{35}}{M_{70}} \div \frac{N_{35}}{N_{70}}$$

The level annual contribution rate for a 20-year limited payment insurance of 1 would be, for age 35,

$$\frac{\text{Benefit Side}}{7049.68360} \div \frac{\text{Payment Side}}{(424294.62475 - 113737.21570)}$$

$$M_{35} \div N_{55}$$

As previously explained an Endowment Insurance is a combination of a Term Insurance and a Pure Endowment.

A Pure Endowment contract is one that promises to pay a sum at the end of a given number of years, or on attaining a given age to the survivors of those living at the date of the contract. Nothing is paid to those who die during the term of the contract.

The Pure Endowment is the antithesis of the Term Insurance. The latter provides benefits to the dependants of those who die during the term. The Pure Endowment provides benefits for those who survive the stated period.

The combination of the two makes provision for the beneficiaries of those who die and for the survivors themselves, and hence is called Endowment Insurance.

The level annual contribution for 20-year Term Insurance for age 35, as heretofore shown, is

$$\begin{array}{cc} \text{Benefit} & \text{Payment} \\ \text{Side} & \text{Side} \\ (M_{35} - M_{55}) \div (N_{35} - N_{55}) \end{array}$$

The Pure Endowment is paid to *Survivors*, and in this case the *Benefit Side* is represented by the *Number Living* at the end of the Endowment Period.

It has been said that D_x is derived from the *number living*. The latter (l_x) being discounted by the present value of \$1.00 to obtain the D column.

The endowment being payable to the number living at the end of 20 years from age 35, obviously this number would be that given in Table 1 for age 55, being 76,534, or l_{55} .

The discounted value of 76,534 (l_{55}) is that number multiplied by the value of 1 for the year 55, or .115656 (represented by v^{55}). And we have

$$l_{55} \times v^{55} = D_{55} = 76,534 \times .115656 = 8851.579 = \text{Endowment Benefit.}$$

The payment side would be the same for the Endowment as for the Term Insurance, because the same persons make contributions during the 20 years, and therefore the annual rate for the Pure Endowment is

$$\begin{array}{cc} \text{Benefit} & \text{Payment} \\ \text{Side} & \text{Side} \\ D_{55} \div (N_{35} - N_{55}) \end{array}$$

Combining the two formulas we have,

$$\begin{array}{cc} \text{Benefit} & \text{Payment} \\ \text{Side} & \text{Side} \\ (M_{35} - M_{55}) + D_{55} \div (N_{35} - N_{55}) \end{array}$$

which gives the level annual contribution at age 35 for a 20-year Endowment Insurance.

Anyone can make the substitution of actual numbers for the symbols by entering the M, D and N columns opposite ages 35 and 55, and the answer then is a simple matter of subtraction, addition and division.

The above formula is made general by expressing it in the terms of any age (x).

$$\begin{array}{cc} \text{Benefit} & \text{Payment} \\ \text{Side} & \text{Side} \\ (M_x - M_{x+20}) + D_{x+20} \div (N_x - N_{x+20}) \end{array}$$

In Exhibits 1 and 2 it was necessary to get the total of present values of claims and contributions to obtain the single premiums for insurance and annuities for a term of years.

On the margin are given these totals for 5, 10, 20 and 35 years in order to illustrate the method of employing single premiums for insurance and annuities in obtaining annual premiums.

By summing from the oldest to the youngest age, and recording the subtotals, as explained for the M and N columns of Table 2, the total of the C or D column for a term of years can be got by taking the differences of the M and N columns.

Thus, the sum of the numbers in the C column from age 20 to 24 inclusive equals $M_{20}-M_{25}$. And the sum of the numbers in the D column for 20 years from age 35 is equal to $N_{35}-N_{55}$.

This is an illustration of the short cuts possible by use of the "Commutation Columns," and, at the same time, an explanation of the preceding formulas where the difference of the M's and N's appear.

The level annual contribution for a varying benefit (increasing or decreasing) is also readily obtained by use of the "Commutation Columns."

If the benefit begins with \$700, obviously that amount is promised through the period of protection, and hence is represented by 700 times M_{35} . Being increased \$100 at the end of the first year that amount runs through the period of protection from age 36 and is represented by 100 times M_{36} . Being again increased by \$100 at the end of the second year that amount runs through the period of the protection from age 37 and is represented by 100 times M_{37} . Being increased by \$100 at the end of the third year that amount runs through the period of the protection from age 38 and is represented by 100 times M_{38} . The benefit is \$1,000 after the third year, and we have

$$700M_{35}+100M_{36}+100M_{37}+100M_{38}=\text{The Benefit Side,}$$

And this corresponds with the illustration, made by use of Exhibit 1, modified by multiplying the number living by 700, 800, 900 and 1,000 to find the amount of yearly claims, and then getting their present values. Obviously the same final results would have been obtained had the number living first been multiplied by the present value of 1, and then multiplied by 700, 800, 900 and 1,000, as in the case of the multiplication of the numbers in the M column, which latter represent the totals of present values of claims on the basis of an insurance of 1. And it will be remembered that the numbers in the C column represent the present values of yearly claims, and that M is the summation of C. And that the C column of Table 2 corresponds to the column of present values of claims of Exhibit 1.

Varying rates of contribution also readily are obtained by use of the Commutation Columns.

Assume that the protection is 1,000 for whole life and that the benefit is uniform, and taken at age 35, and that the initial contribution rate is P' and is increased by 2 for three years and then continues uniform for the remainder of life—being the same assumptions as for the varying rate in the preceding explanation for its computation, by reference to Exhibits 1 and 2.

$$\begin{aligned}\text{The Benefit Side} &= 1000M_{35} \\ \text{The Payment Side} &= P'N_{35}+2N_{36}+2N_{37}+2N_{38}.\end{aligned}$$

Remember that, at the inception of the insurance contract, the Payment Side must equal the Benefit Side, then by equating we have

$$1000M_{35} = P'N_{35} + 2N_{36} + 2N_{37} + 2N_{38}.$$

By reference to the M and N columns of Table 2 (in the Appendix) the values of 1,000 M_{35} , N_{35} , $2N_{36}$, $2N_{37}$ and $2N_{38}$ could be found, and P' , unknown quantity, can be determined from the equation by transposing, so that

$$\begin{aligned}P'N_{35} &= 1000M_{35} - (2N_{36} + 2N_{37} + 2N_{38}) \\ P'_{35} &= \frac{1000M_{35} - 2(N_{36} + N_{37} + N_{38})}{N_{35}} = \frac{7049683.60 - 2(400925.92 + 378594.17 + 357256.75)}{424294.62} \\ &= \frac{7049683.60 - 1136776.84}{424294.62} = 11.25\end{aligned}$$

In the preceding illustration where the single premiums for annuities ($2X_1|a$, $2X_2|a$ and $2X_3|a$) were employed the value of P' was found to be 11.19. With the use of the same number of decimals the two results would not differ even to the amount of 1 in the second place of decimals. The difference of .06 is due to a more accurate calculation in use of the Commutation Columns.

Increasing P' (11.25) by $2+2+2$ we have 17.25 as the level annual rate after the third year to provide for \$1,000 whole life death benefit.

When the Commutation Columns are used the formulas at first may appear formidable, but a little study and commonsense reasoning will render them easy of comprehension.

If one will give a few hours study to Exhibits 1, 2, 3, 4, 5 and 6, which are worked out by arithmetical processes, he will become so well grounded in the fundamentals that little trouble will be experienced in comprehending the construction of the "Commutation Columns," especially when only death rate and interest rate are involved. When the sickness rate and the permanent total disability rate are included and combined with the death and interest factors, then there are such complications that no one other than an experienced and capable actuary should essay to deal with them.

It would be beyond the scope of this work to undertake any explanation of the computations where more than mortality and interest are involved, although tables appear in the appendix which give values derived from combined death and permanent total disability tables.

In presenting the formulas for varying benefits and contributions, the M and N columns were employed thus for the varying benefit,

$$\text{Benefit Side} = 700M_x + 100M_{x+1} + 100M_{x+2} + 100M_{x+3}$$

And for the varying contribution, we had

$$\text{Payment Side} = P'_x N_x + 2N_{x+1} + 2N_{x+2} + 2N_{x+3}$$

Obviously if the increase (or decrease) covered many years the formula would become very cumbersome. To avoid the repeated additions, there is a summation from the oldest to the youngest age of the M and N columns, similar to the treatment of the C and D columns, heretofore explained.

The subtotals in the summation of the N column are given in Table 2 in the columns designated $S_x = \Sigma N_x$.

The subtotals in the summation of the M column are given in the column headed $R_x = \Sigma M_x$. By using the R, the above formula becomes,

$$\text{Benefit Side} = 700M_x + 100(R_{x+1} - R_{x+4})$$

And in the example for varying contribution, the formula would become by use of the S

$$\text{Payment Side} = P_x N_x + 2(S_{x+1} - S_{x+4})$$

Here advantage is taken of the Summation of M and N to obtain their totals by taking the differences of the R and S.

It is my conviction that every officer of a life insurance organization should be able to compute the contribution rates for the ordinary forms of insurance contracts, and I guarantee that anyone can do so after two days of assiduous study, where the explanations are made as in this publication, free from the ordinary expressions of the expert.

I do not mean to be understood as saying that officials, whose duties are administrative and executive, should undertake the work of the actuary. Such a position would be as untenable as to say that they should do the work of the bookkeeper because they know the theory of accounting and could make single or double entries and audit the books to prove their accuracy.

Every man who understands the system of bookkeeping is not a bookkeeper; nor every man who understands discounts, a banker or money lender. Neither every official, who understands the principles of life insurance and how to compute contribution rates, need become an actuary.

I go further and assert that life insurance is of such importance that every young man and woman should understand it before they leave the public schools.

If for no other reason, the science of life insurance should be taught in the schools, because of the mathematical training in the important and everyday processes of addition, subtraction, multiplication and division.

Absolutely these four arithmetical processes are all the requisites for the calculations for the ordinary forms of life insurance contracts, and only an elementary knowledge of equations is necessary to evolve the formulas for use of the commutation columns. And the construction of the latter is simple, as any reader of the foregoing explanations will testify.

In the effort to make plain the principles and practices of life insurance I may be violating the ethics of the profession, judging from the following criticism of a well known actuary: "I don't believe in so far simplifying technical subjects as to dissipate entirely the professional nimbus or aura to which the standing of the expert in the community is largely due. It is not my intention to uphold quackery in the slightest degree, but merely to protect the public from the danger of acquiring the erroneous opinion that the knowledge of the expert is but little superior to that of the man in the street."

Our second lesson will be finished with the following recapitulation, which I commend to be committed to memory, and having them in mind, let there be a rereading, beginning with the explanation of the exhibits.

$$\begin{aligned}
 x &= \text{A person of attained age } x. \\
 v^x &= \text{Present Value of } \$1.00 \text{ for the year of age } x. \\
 l_x &= \text{Number living at age } x. \\
 d_x &= \text{Number dying at age } x. \\
 l_x v^x &= D_x. \\
 d_x v^{x+1} &= C_x. \\
 M_x &= \Sigma C_x = \text{Present Value of an insurance of 1 at age } x \\
 &= C_x + C_{x+1} + C_{x+2} + \dots, \text{ etc.} \\
 R_x &= \Sigma M_x \\
 &= C_x + 2C_{x+1} + 3C_{x+2} + \dots, \text{ etc.} = \Sigma^2 C_x. \\
 N_x &= \Sigma D_x = \text{Present Value of an annuity of 1 at age } x \\
 &= D_x + D_{x+1} + D_{x+2} + \dots, \text{ etc.} \\
 S_x &= \Sigma N_x \\
 &= D_x + 2D_{x+1} + 3D_{x+2} + \dots, \text{ etc.} = \Sigma^2 D_x.
 \end{aligned}$$

The symbol Σ^2 denotes the "second summation," or the "sum of the sum of the function under it."

The C, M and R columns are known as the "Insurance columns," because they are derived from the d column, which latter represents the number dying; and the dying mature the claims for promised benefits or protection.

The D, N and R columns are known as the "Annuity or Payment Columns," because they are derived from the l column, which latter represents the number living and the living make the contributions or payments to provide for the benefit claims.

There is close relation between the number living and the number dying, because the latter are merely withdrawals from the former.

Thus: At age 20 there are 100,000 living. At age 21 there are 99,500 living.

Assuming that death only is the cause of the decreased number at 21,

then $100,000 - 99,500$ must equal the number dying, or $\frac{d_{20}}{500}$.

Then, instead of writing

$$\frac{d_{20}}{500} \times .438834 = 219.416801$$

we could write

$$(100000 - 99500) \times .438834 = 219.416801$$

Performing the multiplication, we have

$$v^{21}l_{20} - v^{21}l_{21} = C_{20}$$

Now, $v^{21} = v \times v^{20}$, it being known by any one informed concerning the succeeding present values of 1.00, that

$$1 \times v = v^1 \text{ (or simply } v),$$

$$v^1 \times v = v^2,$$

$$v^2 \times v = v^3, \text{ and so on until}$$

$$v^{20} \times v = v^{21}, \text{ so that}$$

$$v^{21} = v^{20} \times v, \text{ and}$$

$$v^{21} \times l_{20} = v \times v^{20} \times l_{20}, \text{ but}$$

$$v^{20} \times l_{20} = D_{20}, \text{ and}$$

$$v^{21} \times l_{21} = D_{21}, \text{ then substituting, we have}$$

$$vD_{20} - D_{21} = C_{20}, \text{ or, in terms of } x,$$

$$vD_x - D_{x+1} = C_x, \text{ and since } N_x \text{ is the summation of } D_x, \text{ and } M_x \text{ is}$$

the summation of C_x , the identical relations continue, and we have $vN_x - N_{x+1} = M_x$, and since S_x is the summation of N_x , and R_x is the summation of M_x , the identical relation is true of the second summation of D and C , hence we have $vS_x - S_{x+1} = R_x$, whence it would be possible to dispense with the "Insurance Columns," C , M and R and obtain single and annual premiums to provide for promised death benefits by the employment of the "Annuity or Payment Columns," D , N and S .

To avoid confusion it should be explained that English writers and actuaries and one American writer whose "Insurance Primer" has been used as a text book in some schools and colleges, in giving the summation D_x , record the first subtotal in the N_x column opposite the second age from the oldest age, instead of entering it opposite the oldest age. For example, taking Table II,

$$D_{98} = .06425 = N_{98}$$

$$D_{97} = .22272$$

$$\Sigma = .28697 = N_{97}$$

The British column for N would have no value for the oldest age, 98; but

$$N_{97} = .06425$$

$$N_{98} = .28697. \text{ Therefore}$$

$$N_x = D_{x+1} + D_{x+2} + \dots, \text{ etc., instead of}$$

$$N_x = D_x + D_{x+1} + D_{x+2} + \dots, \text{ etc., as used by the American}$$

writers generally and followed in this publication. The Actuarial Society recommend that it be written \bar{N}_x so that $\bar{N}_x = N_{x-1}$, and $\bar{S}_x = S_{x-1}$; but the closed N and S have been used in this book.

Let it be noted that the

American N_{98} equals the British N_{97} ,

American N_{97} equals the British N_{96} ,

American N_{96} equals the British N_{95} ,

American N_x equals the British N_{x-1}

which latter is the general expression. The equations to show the connection between the benefit and contribution columns, under the British notation would be as follows:

$$\begin{aligned}C_x &= vD_x - D_{x+1}, \\M_x &= vN_{x-1} - N_x, \\R_x &= vS_{x-1} - S_x.\end{aligned}$$

There would, of course, be no change from the American System in the first equation, as only the recording of the totals in the summation of the D column varies from the American method.

PRACTICAL APPLICATION OF FORMULAS.

At the outset I want to admonish against an erroneous idea prevailing very generally, that different principles are involved in the computation of premiums for "old line" life insurance companies from those required to obtain the contribution rates for fraternal beneficiary societies.

For the same benefits promised and under the same conditions of contribution, the net rates would be the same for the life company as for the fraternal society, and the same methods of computation would be followed.

I have explained, in commenting on the open assessment companies and the "Flexible Premium System," why the fraternal societies are justified in adopting contribution rates that will yield no anticipated surplus above the estimated accumulation to maintain rates level and uniform, or to provide for endowments or annuities at old age.

The "old line" company contract is "fixed" as to benefit promised and premium required—it is a "fixed" contract.

The Fraternal Beneficiary Society contract is "flexible" in every respect of the benefit promised, or the contribution required, or both. Either the benefit is limited to the amount of one assessment not to exceed a stated amount, or the contributions are subject to change, or both benefit and contribution may be altered.

The nature of the life insurance company contract makes a surplus over reserve accumulation a necessity or demands annual redundant premiums. Unless there is special provision in the way of capital subscription for the surplus, its accumulation must be by redundant premium payments.

To obtain redundant premiums either there must be a low interest or a high mortality assumption, or both. That is to say, the interest assumed to be earned must be lower than actually earned, or the assumed mortality must be higher than the actual, or both the assumed interest must be lower and the assumed mortality must be higher in the computation of premiums than expected in actual operation.

The fraternal beneficiary society, having the reserved right to pay less than stipulated in the contract or to charge more than the initial rate of contribution, may omit any provision for a surplus over the reserve requirement, and may have computations of interest and mortality assumptions on the basis of what reasonably may be expected in future actual operation.

The "Safety Clause" (the right of extra assessment) in the society contract may well be considered as taking the place of the "Buffer Fund" of the life company.

For a more extended exposition of this subject, see discussion of the "Flexible Premium System."

Let it be impressed that the mathematical processes and the formulas and the computations under them are not different when made for a life company than for a fraternal beneficiary society.

All that has been or may be written on the methods for computing contribution rates is of general application.

Any mortality table may be substituted for that of the National Fraternal Congress Table which has been used in the illustrations.

Any formula may be applied to the values derived from any mortality table or to the first combined death and disability table—having in mind that all formulas in this book follow the American notation and must be modified to conform to the British or other different notations.

Any one can convert the following formulas by remembering that (x) or $(x+n)$, or $(x-n)$ represent the age of the person for whom the value is to be obtained, and then enter the commutation columns accordingly for the numerical quantities. When the latter are substituted for the symbols only the arithmetical processes of addition, subtraction, multiplication and division are required for the solution of the problem.

To the curious it may be stated that in the original selection of symbols, the letters were the first of significant words. Now they are used for convenience without particular reference to the initial letter of any word.

Long before benefits were payable at death, provision for the living was made, and the Government of England granted pensions or annuities on the payment of stipulated sums prior to the existence of life insurance organizations as we now have them.

The first commutation columns were devised to facilitate the computation of annuities, and, for this purpose, only the D and N columns were required.

The single premium for a whole life annuity is represented by a_x , and $a_x = N_x$ divided by D_x ; hence N was taken as the symbol because the first letter in the word "numerator." And D selected because the first letter in the word "denominator." And when N was summed resulting totals were designated S, because first letter in the word "sum."

When the commutation columns were extended to life insurance computations the letter C was selected for no better reason than it was next to D in the alphabet, unless for the reason that it corresponded to the present value of *claims*, and was taken because the first letter in that word. M and R were accepted because of their alphabetical proximity to N and S. The annuity is represented by a or a because the first letter in "annuity."

However, the system of notation now recognized and employed by actuaries is arbitrary and must be learned from the books. An individual is at liberty to select his own symbols to give expression to his values. This was my case when I prepared values for permanent total disability benefits. I have given two tables for combined death and disability benefits. Both are from a combination of the mortality assumption, according to the National Fraternal Congress Table of Mortality, and disability assumption, according to the Fraternal Society Permanent Total Disability Experience. The first are the Tables originally prepared by me in 1902, before any other Actuary in this country had taken up a study of the question. The second are columns worked out by the formulas recognized by the Actuarial Society of America and the notation is the system promulgated by that Society.

If anyone will perform the arithmetical calculations involved to obtain results in dollars and cents from the following formulas, he will be in position to assert that he can compute contribution rates for numerous forms of insurance contracts, *without provision for expenses*.

Single Premium for Ordinary Whole Life Contract for Death Benefit only.

$$A_x = M_x \div D_x.$$

For the Annual Net Contribution,

$$P_x = M_x + N_x.$$

For the Monthly Net Contribution,

$$P_x^{12} = M_x^{12} + 12N_x^{12}$$

For the Single Premium for a Whole Life Annuity payable annually, with the first payment at once,

$$a_x = N_x + D_x.$$

For the same with the annuity payable monthly,

$$a_x^{12} = N_x^{12} + D_x^{12}$$

Single premium for a Deferred Whole Life Annuity payable annually,

$${}_n|a_x = N_{x+n} + D_x.$$

and payable monthly,

$${}_n|a_x^{12} = N_{x+n}^{12} + D_x^{12}$$

For an annual contribution to provide for the Annuity to begin at age $(x+n)$, Premium and Annuity payable monthly,

$$P_n|a_x^{12} = N_{x+n}^{12} \div 12(N_x^{12} - N_{x+n}^{12}).$$

For the Single Premium for a Temporary Annuity,

$$|_na_x \text{ or } a_{\overline{xn}|}^I = N_x - N_{x+n} + D_x.$$

For the same with the Annuity payable monthly,

$$|_na_x^{12} \text{ or } a_{\overline{xn}|}^{12} = (N_x^{12} - N_{x+n}^{12}) \div D_x^{12}$$

The Single Premium for Temporary Insurance,

$${}_nA_x \text{ or } A_{\overline{xn}|}^I = (M_x - M_{x+n}) \div D_x.$$

The annual premium.

$$|_nP_x \text{ or } P_{\overline{xn}|}^I = (M_x - M_{x+n}) \div (N_x - N_{x+n}).$$

Payable monthly.

$$|_nP_x^{12} \text{ or } P_{\overline{xn}|}^{12} = (M_x^{12} - M_{x+n}^{12}) \div (N_x^{12} - N_{x+n}^{12}).$$

Single Premium Term to Age 70,

$$|_{70-x}A_x = (M_x - M_{70}) \div (N_x - N_{70}).$$

Monthly premium for same.

$$|_{70-x}P_x^{12} = (M_x^{12} - M_{70}^{12}) \div 12(N_x^{12} - N_{70}^{12}).$$

By substituting for "70" any other age, as 50, 55, 60, 65, etc., the formula will give rate for Term to Age 50, 55, 60 or 65, etc.

I will not burden the pages further with formulas for monthly contribution rates. If monthly rates are desired make changes in formulas as indicated above, and enter the commutation columns computed on the monthly basis. If these are not given, the monthly rate can be obtained approximately from the formula

$P_x^{12} = 24P_x \div (24 - 11(P_x + d))$, where d is equal to $1 - v$ at the rate of interest assumed in calculation of P_x .

When the rate is 4 per cent, a close approximation for the monthly contribution for the whole life insurance for ages younger than 42 is to multiply the annual rate by .0875. After age 40 or 42 the resulting rate from using this factor will be somewhat too small, the deficiency increasing for the advanced ages. By gradually increasing the multiplier, the approximate accuracy can be maintained.

However, it is much better to construct commutation columns on the monthly basis for the reason that approximation formulas are not readily adapted to monthly contributions for Term, Limited Payment and Endowment Contracts. The work of conversion is not great when using the following formulas:

$$D_x^{12} = \frac{1}{2}(D_x + D_{x+1}). \quad N_x^{12} = \sum D_x^{12}. \quad S_x^{12} = \sum N_x^{12}. \quad C_x^{12} = (1 + \frac{1}{2}i)C_x. \quad M_x^{12} = \sum C_x^{12}.$$

$$R_x^{12} = \sum M_x^{12}.$$

The commutation columns on the monthly basis for the National Fraternal Congress Table of Mortality and 4 per cent interest, given in this book, and originally computed for another book, were derived by very complicated formulas, in which I take no pride.

However, the long and tedious process taught a valuable lesson, namely, that mathematical and algebraic refinements entail useless waste of time when dealing with vital statistics and the contingencies of living and dying.

Since 1900 I have investigated the mortality experience of about 100 different fraternal beneficiary societies, and have made annual investigations of a score of old and large societies, to find varying ratios for each Society, and for each investigation of the same Society.

A reference to the diagrams which graphically show the irregularities of death rates from age to age will convince anyone that we deal with an eccentric value when treating average mortality ratios.

In the early days of my studies I accepted the often repeated statement that the death ratios amongst a large number of persons were regular, and in the unvarying character of their operation were like unto the law of gravitation.

I am inclined to believe that the man who was responsible for that assertion had no experience in dealing with actual facts, but that he had all of his information from books which discuss pretty theories.

I have no purpose to belittle the advantage of mortality tables and derived values. They can be handled as efficient tools for the building of great and successful life insurance companies and societies. But the truth of the case justifies the dissipation of the prevalent idea that the mortality table is in correspondence with actual death rate.

The mortality table is a fiction, corresponding exactly with no actual experience, not even with that upon which it is based. Observe "graded" mortality ratios in comparison with the irregular ones in actual experience as represented in the graphic illustrations heretofore given.

The facts do not support the theory of refinements in mathematical calculations which have been presented in many publications. The main point is to be sure and get on the side of safety, since a few cents added to the rate will do no harm and may prevent readjustment.

Twenty years of activity in the effort to help the fraternal societies out of trouble have taught many lessons, and one of the most valuable to me is that a knowledge of the facts in a case is of more importance than anything else in deciding upon the best plan of business conduct.

Theory as a generalization of principles on which practice proceeds is most excellent as a mean toward a positive end. But the results of actual and practical operation modify and should control theory.

Theory and practice in their relation to each other may be likened to the science of composition as distinguished from the art of execution in music.

Theories and refinements in mathematical computations are indispensable assets for an actuary, nevertheless, they are almost worthless if the possessor has not the experience to make commonsense application of them in actual practice.

With the opportunity for observation covering thirty-five years of business contact I have found that intelligent men receive the best part of their education *after leaving* institutions of learning. It is original thought that counts, and it cannot be acquired from books, however useful (and they are extremely useful) books and schools are, as aids.

This diversion was due to the reflection upon the computations of the N^{12} and M^{12} columns in the year that the National Fraternal Congress formally ratified the mortality table which bears its name. I can give no better example to sustain my comment than an explanation of the method adopted in that instance.

To get N_x^{12} , D_x^{12} was first obtained, thus:

Assuming an even distribution of deaths occurring in a year, if there are l_x persons living at the beginning of a year, and if d_x die during the year, the deaths each month will be represented by d_x divided by 12.

The first instalment of the annual premiums will be paid by l_x persons; the second by $l_x - (d_x \div 12)$; the third by $l_x - (2d_x \div 12)$; . . . and the twelfth by $l_x - (11d_x \div 12)$.

Furthermore, at the end of the year, the first instalment will amount to $(1+i) \times (l_x \div 12)$, i being the rate of interest. The second instalment will amount to $(1+(11i \div 12)) \times (l_x - (d_x \div 12))$ divided by 12. The third instalment will amount to $(1+(10i \div 12)) \times (l_x - (2d_x \div 12))$ divided by 12; . . . and the twelfth will amount to $(1+(i \div 12)) \times (l_x - (11d_x \div 12))$ divided by 12.

The sum of these amounts is

$$\begin{aligned} & \frac{1}{12} \left(l_x(12 + \frac{12+11+10+\dots+1}{12}i) - \frac{d_x}{12}(1+2+3+\dots+11) \right. \\ & \left. + \frac{11+2.1+3.9+4.8+\dots+10.2+11}{12}i \right) = \frac{1}{12} \left(l_x(12 + \frac{78i}{12}) - \frac{d_x}{12}(66 + \frac{286i}{12}) \right) \\ & = l_x(1 + \frac{13i}{24}) - \frac{d_x}{24}(11+4i). \end{aligned}$$

To obtain the final term it was necessary to change 286i to 288i, but the consequent error is insignificant.

To get D_x^{12} the foregoing expression was multiplied by v^{x+1} , since it represents the value of the instalments *at the end of the year*. $N_x^{12} = \sum D_x^{12}$.

The M_x^{12} column has nothing to do with the monthly payment of premiums, but it was constructed on the assumption that the death claims are to be paid within a month of approval—which is the general practice.

If claims equal to $d_x \div 12$ are to be paid at the end of the first month, the equivalent sum of money at the end of the year, will be $(1+(11i \div 12)) \times (d_x \div 12)$. For the second month's claims the equivalent will be $(1+(10i \div 12)) \times (d_x \div 12)$ and for the twelfth month it will be $d_x \div 12$.

The sum of the instalments is, $\frac{d_x}{12} \left(12 + \frac{11+10+9+\dots+1}{12} \right) = d_x \left(1 + \frac{11i}{24} \right)$

This expression multiplied by v^{x+1} will give C_x^{12} . $M_x^{12} = \Sigma C_x^{12}$.

The values obtained by the complicated formulas are substantially the same as secured from the approximation formulas first given.

Annual Premium for Limited Payment,

$${}_n P_x = M_x \div (N_x - N_{x+n}).$$

Annual Premium for Endowment Insurance,

$$\overline{P_{x:n}} = (M_x - M_{x+n} + D_{x+n}) \div (N_x - N_{x+n}).$$

Single Premium for Endowment Insurance,

$$\overline{A_{x:n}} = (M_x - M_{x+n} + D_{x+n}) \div D_x.$$

Annual Premium for \$1,000 of Insurance payable at death prior to age 70, or payable at age 70 in 10 equal annual instalments, first payment at age 70; contributions cease at 70. If insured dies before instalments are paid the balance of \$1,000 is paid in one sum to beneficiaries.

$$1000PE_{x:70-x} = 1000M_x + 100(N_{70} - N_{80}) - 100(R_{70} - R_{80}) \div N_x - N_{70} = 1000M_x + 100d(S_{70} - S_{80}) \div N_x - N_{70}.$$

If contributions are to continue during the payment of instalments or until death, the denominator would be

$$N - N_{80}.$$

Another formula is to treat the present value of the instalments at 70 as an endowment.

$$1000PE_{x:70-x} = 1000(M_x - M_{70}) + 875D_{70} \div N_x - N_{70}.$$

And

$$1000AE_{x:70-x} = 1000(M_x - M_{70}) + 875D_{70} \div D_x.$$

Annual Premium for \$1,000 at death prior to 70, or an annuity for life of \$100, first payment at 70. Contributions cease at 70.

$$|_{70-x} P_x = 1000(M_x - M_{70}) + 100N_{70} \div N_x - N_{70}.$$

Single Premium for a death benefit of 1 in the first year and increasing by 1 until death

$$(IA)_x = R_x \div D_x.$$

The Annual Premium

$$(IP)_x = R_x \div N_x.$$

Annual Premium for whole life insurance, all premiums paid to be returned in addition to the sum insured.

$$P_x = M_x \div (N_x - R_x).$$

Annual Premium for whole life insurance, all premiums paid to be returned with simple interest at the rate i with the sum insured,

$$P_x = M_x \div (N_x - R_x - i\Sigma R_x).$$

Annual Premium for death benefit in the first year of \$1,000 less the amount of the premium multiplied by the years of "Expectancy," and increasing for each subsequent year by the amount of the premium to the end of "Expectancy,"

$$P_x = 1000M_x \div (N_{x+e_x} M_x - (R_{x+1} - R_{x+1+e_x})).$$

Annual Premium for a life annuity of 1 beginning at age 70, no benefit payable in event of prior death.

$$P_n |a_x = N_{70} \div (N_x - N_{70}).$$

Annual Premium for an insurance of 1 at death, with an annual reduction in the contributions by the twentieth part of the first payment, so that the contributions diminish each year and cease after twenty payments.

$${}_n P_x = M_x \div N_x - \frac{1}{20}(S_{x+1} - S_{x+21}).$$

My original purpose was to incorporate amongst the formulas one for each society, but to date only sixty-six have sent their laws and constitutions, and half of that number announce contemplated changes of material or minor importance, while upwards of one hundred give as the reason for not sending their laws that a new edition soon will be necessary on account of probable changes to meet conditions which are expected to develop under the operation of the valuation laws. In these circumstances the original purpose had to be abandoned. However, I have undertaken to give a sufficient number of formulas to enable the student to apply the commutation columns in any ordinary case. For the postage I will pass upon any special formula submitted by a subscriber to this book.

A NOVEL PLAN. Recently a very novel plan has come into prominence from the activity of its originator, The Heralds of Liberty, of Huntsville, Alabama, with executive offices in Philadelphia. Because it is unique and very much out of the ordinary, the plan is being severely criticised by insurance agents and journals, and by some Insurance Commissioners. Some go so far as to characterize it as a gambling scheme, because the member holding the lowest numbered certificate in his class may elect to surrender his certificate for cancellation in consideration of a cash payment, the election being granted at the death of a member of his class. In brief, \$500 is made the unit of protection payable to beneficiaries at the death of the member, or a similar amount to the holder of the lowest numbered certificate on the death of a member who entered the Society at the same age and was in the same "Class" with the holder of such certificate. Originally an Old Age Double Endowment was promised on attaining to a stated age above 70.

No objection can be raised to the promise to pay the death benefit, nor to the former promise to pay an old age benefit.

The payment to a living member at the death of an associate member is the cause of the adverse criticism.

The members are placed in "Divisions" and "Classes." A "Division" is composed of not exceeding 1000 persons of all ages at entry within the admission ages. A "Class" is composed of the members of a "Division" who entered at the same age. Each member of a "Class" is given a number and at the death of one of the "Class," the Society will pay \$500 to the beneficiary of the deceased member and \$500 to the member of the same "Class" and "Division" who holds the lowest numbered certificate.

It is charged that the payment to the living member is a "gamble," or "lottery."

To the extent that life insurance is based upon the chances of living or dying, the life insurance business is a "gamble," or "lottery." To no greater extent is the payment of a sum of money to a surviving member on the death of an associate member. Survivorship insurance is too old and too well established and too favorably known to be characterized as a "gamble."

It is argued that in ordinary survivorship insurance the parties as insured or beneficiaries are named in the contract, which is contained in one policy; but in this case each member holds a separate certificate and a payment is promised to Number 1 in the event of the death of Number 2, or Number 10, or Number 20, or any other numbered person in his "Class."

The fact is ignored that the identification in advance of death is immaterial in the treatment of the probabilities involved. The death of some member of the "Class" is the event that fixes the time of payment, and it is wholly immaterial whether the amount be \$1000 payable in one sum or in two sums of \$500 each, if provision has been made for the total payment.

In the text books we learn of joint life probabilities concerning persons designated u, v, x, y and z. Where is the difference in calling them 1, 2, 3, 4 and 5?

It is perfectly orthodox to promise something to u in the event of the death of v, or of x, or of y, or of z. Why a "gamble" to promise something to 1 in the event of the death of 2, or of 3, or of 4, or of 5?

"But the latter are not named in the same policy contract," is a reply.

But if they are recorded upon the books of the Society, definitely associating them in mutual cooperation, and specifically setting them into a designated "Class," limited to a given number, and each furnished with a certificate reciting the conditions of insurance, and all are subject to the same probabilities and the Society to the same liabilities as if covered in a single policy contract, wherein is there any "gamble?"

Every reputable and informed actuary will admit that contribution rates can be computed for the payment to the holder of the lowest numbered certificate (or for that matter to the holder of any numbered certificate in the "Class") upon the death of any member of the "Class." And the rates can be computed upon the basis of any ordinary mortality table for single lives, or with the aid of a table for joint lives. This fact takes the case from amongst those to be characterized as "lotteries," or "gamble," or "frauds."

The formula for the benefits stated is one of the simplest in form, when employing Joint Life Commutation Columns.

$500M_{xx} + N_{xx} = \text{Annual Premium}$, which provides \$500 to the beneficiaries of the deceased and \$500 to the surviving member of the same "Class" holding the lowest numbered certificate. (It could as easily be the highest numbered, or the next serial number to that of the deceased.) If the Single Life Columns are employed we have

$$P_x = 1000 (M_x - M_{x+n}) \div (N_x - N_{x+n}), \text{ where } 2l_{x+n} = l_x.$$

The two formulas are substantially equivalent. I give the rates for two equal lives in the appendix, derived from the "Makehamized" N. F. C. Table for Joint Lives. Using the same Table for Single Lives, rates by the last formula may be obtained for comparison. For the following ages the net annual premiums are as follows, on basis of,

Ages.	Joint Life.	Single Life.
20	\$ 8.15	\$ 8.09
30	10.65	10.53
40	15.08	14.76
50	23.28	22.50
60	39.28	38.15

From an actuarial standpoint, the formulas for contribution rates to provide for the benefits of many societies would be very interesting, and I have been tempted to give the most unusual. However, for the reason that many changes are contemplated, and because no question has been raised concerning the benefits by Insurance Departments, I have not multiplied examples. The Heralds of Liberty, with their copyrighted plan, have brought about an especially interesting question which justifies the foregoing analysis.

To avoid confusion from similarity I give the following expressions together:

- ${}_n P_x = \text{Annual Premium for Limited Payment.}$
- ${}_n | P_x = \text{Annual Premium for Deferred Insurance.}$
- ${}_n P_x = \text{Annual Premium for Temporary Insurance,}$
- Or $P_{\overline{x}|n}^I = \text{Annual Premium for Temporary Insurance.}$
- $P_{\overline{x}|n}^I = \text{Annual Premium for Pure Endowment.}$
- $P_{\overline{x}|n} = \text{Annual Premium for Endowment Insurance.}$

As heretofore stated, the notation for the first Death and Disability tables (see Appendix) was my own, because it was the first American production of its kind. I supplied other actuaries with the statistics and other tables have been constructed, and recently the Actuarial Society of America adopted a system of notation which follows. I have prepared a second series of Death and Disability values, which appear for the first time in this book. I also regraded the National Fraternal Congress Table of Mortality by the Makeham formula to facilitate the computation of contribution rates for joint lives. That table and derived values appear in the Appendix.

DISABILITY SYMBOLS.

l_x^{aa} = the number of active lives at age x .

l_x^{ii} = the number of invalid lives at age x ,

$$\text{then } l_x^{aa} + l_x^{ii} = l_x.$$

l_x^i = the survivors at age x in a mortality table based on invalid lives (not to be confused with l_x^{ii} amongst whom there are additions each year from those just disabled).

d_x^{aa} = the number dying as active lives between ages x and $x+1$.

d_x^{ii} = the number dying as invalid lives between ages x and $x+1 = l_x^{ii} + i_x - l_{x+1}^{ii}$.

i_x = the number of active lives becoming invalid between ages x and $x+1$.

p_x^a = the probability of an active life aged x being alive one year hence, whether then active or invalid.

q_x^a = the probability of an active life aged x dying within a year, whether still active or after becoming invalid,

$$\text{then } p_x^a + q_x^a = 1.$$

p_x^i = the probability of an invalid life aged x being alive one year hence.

q_x^i = the probability of an invalid life aged x dying within a year,

$$\text{then } p_x^i + q_x^i = 1.$$

p_x^{aa} = the probability of an active life aged x being alive and active one year hence.

p_x^{ai} = the probability of an active life aged x being alive but invalid one year hence.

q_x^{aa} = the probability of an active life aged x dying while still active within a year.

q_x^{ai} = the probability of an active life aged x becoming invalid and dying within a year.

r_x = the probability of an active life aged x becoming invalid within a year,

then $p_x^{aa} + p_x^{ai} = p_x^a$; $q_x^{aa} + q_x^{ai} = q_x^a$; $p_x^{ai} + q_x^{ai} = r_x$; $p_x^{aa} + q_x^{aa} = 1 - r_x$; $p_x^{aa} + p_x^{ai} + q_x^{ai} + q_x^{aa} = 1$.

r_x' = the absolute annual rate of invalidity,

$$\text{then } r_x' = \frac{i_x}{l_x^{aa} - \frac{1}{2}d_x^{aa}} = \frac{r_x}{1 - \frac{1}{2}q_x^{aa}}.$$

$$D_x^{aa} = v^x l_x^{aa} \quad N_x^{aa} = \Sigma D_x^{aa}.$$

$$D_x^{ii} = v^x l_x^{ii} \quad N_x^{ii} = \Sigma D_x^{ii}.$$

$$D_x^i = v^x l_x^i \quad N_x^i = \Sigma D_x^i.$$

$$C_x^i = v^{x+1} d_x^i \quad M_x^i = \Sigma C_x^i.$$

$${}^iC_x = v^{x+1} i_x \quad {}^iM_x = \Sigma {}^iC_x.$$

a_x^{ai} = value of an annuity payable at the end of each year provided an active life now aged x is then alive but invalid.

a_x^a = value of an annuity-due on an active life payable during survival, active or invalid.

a_x^{aa} = value of an annuity-due on an active life payable during activity.

a_x^i = value of an annuity-due on an invalid life.

${}_n|a_x^{a(\overline{in})}$ = value of a deferred temporary annuity payable at the beginning of each of t years deferred n years, provided the disability occur during the n years.

$a_x^{aa} : \overline{n} | : \overline{y-x} |$ = value of an annuity-due on an active life for n years or for $y-x$ years, whichever is the shorter, during activity.

FORMULAS FOR RESERVES. Another commonly used method for determining the reserve at any age is by actual accumulation of premium receipts, less death losses. Thus, l_x persons insured at age x each pay P_x dollars annually in advance. The total payments for the first year are, therefore, $l_x \times P_x$.

This sum accumulates interest at the annual rate of i , and amounts, at the end of the year, to $l_x P_x \times (1+i)$. The death losses payable at the end of the year equal d_x dollars. Subtracting these losses, we have left $l_x P_x (1+i) - d_x$. This remainder belongs to the survivors, who number $l_x - d_x$, or l_{x+1} ; therefore, the share of each is

$\frac{l_x P_x (1+i) - d_x}{l_{x+1}}$. Multiplying both numerator and denominator by v^{x+1} , and remembering

that $1+i = \frac{1}{v}$, we obtain—

$$\frac{l_x v^x P_x - v^{x+1} d_x}{v^{x+1} l_{x+1}}, \text{ or } \frac{D_x P_x - C_x}{D_{x+1}}$$

If, now, we represent $\frac{D_x}{D_{x+1}}$ by u_x , and $\frac{C_x}{D_{x+1}}$ by k_x , the expression becomes $P_x u_x - k_x$,

which is the reserve to the credit of each survivor at the end of the first year. To find the reserve at the end of the second year, add P_x , the second annual premium, and proceed as before, using u_{x+1} , and k_{x+1} in place of u_x and k_x . By continuing the process, the reserve at the end of any specified year may be ascertained. This is known as the retrospective method.

A simple formula for obtaining the reserve on a continuous level annual premium for Whole Life Insurance is:

$$\frac{a_x - a_{x+n}}{a_x}$$

The required reserve accumulation on Endowment and Term Insurance is obtained by use of Temporary Annuities in a similar way as above indicated for the use of Whole Life Annuities in Whole Life Insurance.

The prospective and retrospective methods will bring out identical results under the same assumptions of death rate and interest rate—otherwise not. The retrospective formula is:

$${}_nV_x = \frac{P_x(N_x - N_{x+n}) - (M_x - M_{x+n})}{D_{x+n}}$$

$(N_x - N_{x+n}) \div D_{x+n} = {}_nU_x$, which multiplied by the protection by P_x , gives the accumulated contributions. $(M_x - M_{x+n}) \div D_{x+n} = {}_nK_x$, which multiplied by the protection gives the accumulated claims. The difference is the accumulated reserve.

In the following illustrations are shown the practical workings of three methods of computing reserves. Nos. 1 and 2 are applicable to any level premium contract

of insurance. No. 3, which is more rapid than either of the others, is, unfortunately, limited to whole life insurance, with continuous annual premiums, being, in fact, a special case of No. 2. All three illustrations are based on the National Fraternal Congress Mortality Table and four per cent interest, and the same entry age is assumed in each, so that the results may be compared with one another, and with the table of reserves in the appendix and "Friendly Societies and Fraternal Orders." In No. 3, the reserves obtained are on an assurance of one dollar, and should, therefore, be multiplied by 1,000 before comparison is instituted. When extensive reserve tables are to be computed by the methods of Nos. 2 or 3, the work will be greatly facilitated by the preliminary tabulation of $A_{x+1} - A_x$ in the former case, and of $a_x - a_{x+1}$ in either case. Reserve at end of years is printed in italic figures.

No. 1.	
$P_{20} =$	10.34
$u_{20} =$	1.0452
$P_{20} \times u_{20} =$	10.807
$k_{20} =$	5.025
${}_1V_{20} = (P_{20} \times u_{20}) - k_{20} =$	5.78
$P_{20} =$	10.34
${}_1V_{20} + P_{20} =$	16.12
$u_{21} =$	1.0453
$({}_1V_{20} + P_{20}) \times u_{21} =$	16.850
$k_{21} =$	5.061
${}_2V_{20} = ({}_1V_{20} + P_{20}) \times u_{21} - k_{21} =$	11.79

No. 2.	
$A_{20} =$	211.86
$A_{21} =$	216.42
$A_{21} - A_{20} =$	4.56
$a_{20} =$	20.492
$a_{21} =$	20.373
$a_{20} - a_{21} =$	.119
$P_{20} =$	10.34
$P_{20}(a_{20} - a_{21}) =$	1.23
${}_1V_{20} = A_{21} - A_{20} + P_{20}(a_{20} - a_{21}) =$	5.79
$A_{22} - A_{21} =$	4.73
$a_{21} - a_{22} =$	.123
$P_{20}(a_{21} - a_{22}) =$	1.27
${}_2V_{20} = {}_1V_{20} + A_{22} - A_{21} + P_{20}(a_{21} - a_{22}) =$	11.79
$A_{23} - A_{22} =$	4.92
$a_{22} - a_{23} =$	.128
$P_{20}(a_{22} - a_{23}) =$	1.32
${}_3V_{20} = {}_2V_{20} + A_{23} - A_{22} + P_{20}(a_{22} - a_{23}) =$	18.03

No. 2—Continued.	
$P_{20} =$	10.34
${}_2V_{20} + P_{20} =$	22.13
$u_{22} =$	1.0453
$({}_2V_{20} + P_{20}) \times u_{22} =$	23.133
$k_{22} =$	5.097
${}_3V_{20} = ({}_2V_{20} + P_{20}) \times u_{22} - k_{22} =$	18.04
$P_{20} =$	10.34
${}_3V_{20} + P_{20} =$	28.38
$u_{23} =$	1.0453
$({}_3V_{20} + P_{20}) \times u_{23} =$	29.666
$k_{23} =$	5.133
${}_4V_{20} = ({}_3V_{20} + P_{20}) \times u_{23} - k_{23} =$	24.53

No. 3.		
$a_{20} =$	20.492	Multi-
$a_{21} =$	20.373	ply by
$a_{20} - a_{21} =$	.119	1,000
${}_1V_{20} = (a_{20} - a_{21}) \div a_{20} =$		.00581
$a_{21} - a_{22} =$	.123	
$(a_{21} - a_{22}) \div a_{20} =$		.00600
${}_2V_{20} = {}_1V_{20} + (a_{21} - a_{22}) \div a_{20} =$		.01181
$a_{22} - a_{23} =$	.128	
$(a_{22} - a_{23}) \div a_{20} =$		.00625
${}_3V_{20} = {}_2V_{20} + (a_{22} - a_{23}) \div a_{20} =$		.01806
$a_{23} - a_{24} =$	.133	
$(a_{23} - a_{24}) \div a_{20} =$		.00649
${}_4V_{20} = {}_3V_{20} + (a_{23} - a_{24}) \div a_{20} =$		.02455
$a_{24} - a_{25} =$	.138	
$(a_{24} - a_{25}) \div a_{20} =$		.00673
${}_5V_{20} = {}_4V_{20} + (a_{24} - a_{25}) \div a_{20} =$		.03128

AN EXAMPLE.

The foregoing formulas were made from the benefits actually promised by companies and by societies. The last one now given will show how differently different persons will prepare formulas from a different view point of identical provisions in the certificate contract.

The society in question promised to pay \$1,000 at death prior to age 70 and attaining to age 70 promised a payment of \$50, and at the beginning of each subsequent year for 9 years to pay a similar amount; that is, would pay \$50 on attaining age 71, \$50 on attaining age 72, 73, 74, 75, 76, 77, 78 and 79, being a total of endowments or annuity payments of \$500 in ten equal annual instalments. Premium payments would continue until death, and were not altered on account of the decrease in the amount

of protection, due to the payment of the \$50 annuities at and after age 70. The \$500 of protection against death was continued after the annuity payments were discontinued. Since the contributions were to be made unaltered at the level rate as of age of entry until death; therefore, as seen from former formulas, the denominator in this case would be N_x . The numerator, or the benefit side of the contract, would be a straight \$1,000 death benefit to age 70, and then decreasing the death benefit by \$50 for each year to age 79 inclusive, and then continuing \$500 death benefit from 79 to the end of life. $1,000M_x$ will represent the benefit side to age 70. From 70 the death benefit will decrease \$50 a year. According to former illustrations we must use the R column for the decreasing protection, and we would have, beginning the reduction at 70, 50 ($R_{70}-R_{80}$). In the place of the decreasing amount of death benefit there is an annuity of \$50, and, according to former illustrations, the annuity would be represented by the N column, so that we would have a payment of \$50 each year, and hence we would have $50(N_{70}-N_{80})$; therefore the complete enumerator would be $1,000M_x-50(R_{70}-R_{80})+50(N_{70}-N_{80})$ for the straight life and decreasing temporary insurance, and for the instalment of \$50 annually from 70 to 79 inclusive. These instalment endowments are of the nature of a deferred temporary annuity. We have seen that R can be written in the terms of S, and when substituted in the above numerator we would have $R_{70}=vS_{70}-S_{71}$ and $R_{80}=vS_{80}-S_{81}$, whence $1,000M_x-50(R_{70}-R_{80})+50(N_{70}-N_{80})=1,000M_x-50(vS_{70}-S_{71}-vS_{80}-S_{81}-N_{70}+N_{80})$, but as S_x is equal to $S_{x+1}+N_x$, whence the last expression= $1,000M_x+50(1-v)(S_{70}-S_{80})$, but as $1-v$ equals d , this becomes $1,000M_x+50d(S_{70}-S_{80})$, which is the formula that probably will puzzle the operator who went to the trouble of constructing the modified C and the modified M columns in order to obtain the results which are possible through the use of the last named simple formula. It will be appreciated what may be done by the use of the commutation columns when it is stated that the operator who undertook to obtain the annual premiums for the benefits above described modified the regular C column (as given in the appendix to this book for the National Fraternal Congress Table of Mortality) from 98 to 70 by taking one-half thereof for all of the ages from 77 to 79, then for age 78 he took eleven-twentieths of the regular C column and for 78 twelve-twentieths, and so on, increasing one-twentieth until and including age 70, where he had nineteenth-twentieths of the regular C column. For age 79, and all ages younger, the regular C column was used. By summing this new C column he secured a new M column and used it in the regular way for obtaining contributions with a decreasing insurance from 70 to 80, and with a constant insurance from 80 to the end of life.

AN ENGLISHMAN'S CONCLUSION.

I shall conclude this chapter with a quotation from Thomas Fatkin, of Leeds, England, who issued a 62-page pamphlet in 1906 in advocacy of teaching life insurance and annuity principles in the public schools, and undertook to demonstrate that the computations involved simple arithmetical processes, in connection with a "preparatory table," meaning "commutation columns:"

The principles upon which hundreds of millions of pounds are financed in this country are only understood by a few competent men, who could probably be put in a single room of a small cottage. How long will the Board of Education let this state of things continue?

It is probable that most of the 90,000 teachers could explain the following problem to their pupils:

$$\frac{1}{\sqrt{(11-2\sqrt{30})}} - \frac{3}{\sqrt{(7-2\sqrt{10})}} - \frac{4}{\sqrt{(8\times 4\sqrt{3})}} = 0$$

But, at the same time, it is very possible that very few of them could solve the following problem:

Assuming that a teacher now 25 years of age desired to provide himself with an annuity of 50 pounds, payable quarterly, on arriving at 60 years of age, and in the event of death before 60, half the amount subscribed to be returned to his representatives. How much per annum should the teacher subscribe?

I have shown that the solution of such problems are only simple arithmetical operations—with the help of a preparatory table.

In the "Advanced Course of Mathematics in the University Tutorial Series," a work used in our universities, and also used in the "University Correspondence College," for training students for the matriculation examination of London University and for higher honors, there are abundance of such problems as the above "Surd" problem.

I notice only two problems in this great and deservedly popular work, which treat on two very simple questions affecting life Annuities and Assurances. The answers to both problems appear to be incorrect. I will give one of them, which appears on page 275.

"A man aged 54 in the receipt of a pension of 100 pounds a year net, wishes to commute that for a present payment, interest being reckoned at 5 per cent. How much does he receive if his expectation of life is 17 years?" The answer given is 1,127.406 pounds.

If the eminent mathematical authors had put the problem as follows: "A man aged 54, in the receipt of a pension of 100 pounds a year, *certain* for 17 years, wishes to commute that for a present payment, interest being reckoned at 5 per cent." The answer would be 1,127.4066 pounds, which can be ascertained from tables published above a century ago.

The formula for the Annuity Certain is:

$$\text{Value of Annuity} = \frac{100 \times (1.05^{17} - 1)}{1.05^{17} \times .05} = \text{£}1127.4066,$$

a mere geometrical progression sum.

The formula is not, however, applicable to Annuities on life, whatever may be the average number of years "Expectation." I allude to this problem because I believe that there are a great many arithmeticians, accountants, and financiers who fall into the same error.

An eminent mathematician above 70 years ago wrote: "Many persons who have but an imperfect knowledge of the subject (i.e., Annuities) erroneously suppose that the value of an Annuity payable during the life of an individual is found by calculating the value of an Annuity Certain for a number of years equal to the expectation of life of the individual."

According to the mortality rate upon which my calculations are made (i.e., the mortality experienced amongst members of Friendly Societies as ascertained by the Government Actuary) a man at 55 has an expectation of future life of 15.904 years. If he have a pension of 100 pounds net, payable at the end of each year, what is the commutable value of the pension at 2½ per cent interest?

$$\text{Formula as before } \frac{N_{55}}{D_{55}} = \frac{15646.0662}{187663.2477} = \text{£}11.994277$$

the value of £1 per annum $\times 100 = \text{£}1199 \text{ 8s } 6.65\text{d.}$

Let any student work out the commutable value on the principle of taking 15.904 years certain and 2½ per cent as the basis of valuation as adopted in the mathematical work referred to and he will make the value 100 pounds too much.

According to the Carlisle rate of mortality, a person at 29 years of age has an expectation of just 35 years, the commutable value of a pension of 100 pounds at age 29 made upon a correct principle (Carlisle 2½ per cent) is £2,143 10s 7d.

According to the data I have used in my calculations, Government Friendly Societies 2½ per cent, the commutable value would be:

$$\frac{N_{29}}{D_{29}} = \frac{41203.9166}{882607.6213} = 21.42048 \times 100 =$$

£2,142 1s 0d, a difference of only £1 9s 7d as compared with Carlisle rate of mortality.

If worked out on erroneous principles, i.e., adopting the 35 years' "expectation" as a basis, the commutable value would be £2,314 10s 4d, or £172 9s 4d too much. This would be a serious difference if a few million pounds were invested in such a fund. ↵

How long will the Board of Education permit such simple formulæ as those to which I have alluded to remain untaught in our public schools?

DEFINITIONS.

INSURANCE is or should be a provision for indemnity against loss. Fire Insurance is an indemnity against loss from fire; Marine Insurance against loss by accident at sea; accident Insurance against loss by accident either to the person or to property. Disability Insurance, which includes accident insurance, is to indemnify against loss of time, either due to sickness or accident which disables a person or prevents him from attending to his ordinary occupation. Sickness Insurance is to indemnify against loss of time by sickness, and is also included under disability. Life Insurance is to indemnify against loss from death; that is to say, the bread winner upon whom are dependent other persons, is of value to them, and should he die they will sustain a loss because of that event. Therefore, accepting the definition that insurance is to indemnify against loss, there can be or should be no insurance where loss will not result either from accident or disease or death or fire or storm or other causes of loss, as from burglary and for theft and for mistakes of different kinds.

Insurance has been diverted from its proper channel by failure to confine it to indemnifying against loss. It occurs to me that personal insurance would be about perfect if a man were to insure against loss from death during the period in which he has dependants and when he is a support to some one; and during the same period he should insure against the loss of time through disability from accident or sickness, and during the same period, while he is able to earn not only a living, but to lay aside something, he should contribute to a deferred pension; that is, he should make annual or monthly payments from his youth to old age, when there should be a discontinuance of the contributions and also a discontinuance of the insurance against death and of the insurance against disability, and he should enter upon a pension or an annuity, or should have paid to him one sum in cash for investment and for the protection of himself in old age. The trouble I have found in putting such a plan into operation is the desire on the part of Americans to have large amounts in the way of annuities or in the way of disability benefits. To give the amount of death benefit, and the amount of disability benefit desired by the ordinary workingman, when it comes to considering a contract of this character, and then an amount sufficient for his old age, as he considers it, the rate of contribution would come so high that it is beyond the ability of the ordinary workingman to pay. If a moderate amount of insurance protection in the way of death benefit, disability benefit and a pension for old age would satisfy the average American citizen, I should say that this combined protection would be the most satisfactory and certainly would meet the needs of the great majority of people.

A POLICY is the contract written by Life Insurance Companies.

A CERTIFICATE is the contract written by Fraternal Beneficiary Societies.

There is a material difference between a policy issued by Life Companies and a certificate issued by Fraternal Societies, due to the fact that the former is a fixed contract, and cannot be avoided during its term by the life company, while the member or policy-holder may discontinue or break his contract at his option. A certificate issued by the Fraternal Societies is not a fixed contract, but flexible. While it cannot

be voided during its term by the Society, and while the member may discontinue it or break his contract at option, yet there are obligations (while he is a member) upon the holder of the certificate which is not present in the provisions of the policy of a life insurance company.

Policy and certificate contracts vary greatly, the same company or the same society issuing many forms of policies or certificates.

THE ORDINARY WHOLE LIFE policy is one which promises to pay a death benefit or a disability benefit at death, or in the event of disability whenever it may occur, and the contributions continue until death.

THE LIMITED PAYMENT contract is one where the contributions are limited either to one payment or to 10 payments or 15 payments or 20 payments, or as may be agreed upon at the issuance of the contract. The death or disability benefit is for the whole period of life similar to a benefit promised under an ordinary whole life contract. At the date when the contributions cease—that is, at the end of the premium-paying period—the reserve or accumulation on such certificates is equal to the single premium at the age at the end of the premium-paying period.

ENDOWMENT INSURANCE is a contract promising to pay a death and disability benefit within a term of years, or at the end of the period to pay an endowment or an amount in cash or the amount of the certificate or policy by instalments. This is a combination of term insurance and pure endowment insurance as heretofore explained.

TERM INSURANCE is temporary insurance for a designated term or period, which may be for 5, 10, 15, 20 or any stated number of years, or to a designated age, as age 50, 60 or 70.

RENEWABLE TERM INSURANCE gives the privilege of renewing the insurance at the end of the given term, without medical re-examination, by contributing at an increase contribution rate for the renewed term.

CONVERTIBLE TERM INSURANCE gives the privilege of converting or changing contracts without medical re-examination, but at increased contribution. The transfer should not be granted to a lower contribution rate for the same benefit.

INSTALMENT INSURANCE provides that the benefits shall be paid by instalments instead of one sum.

MORTALITY TABLES are the instruments, so to speak, which are used in the computation of contribution rates for promised benefits.

There are in existence numerous tables of Mortality. Some of these have been constructed from population statistics, and many of them from life insurance statistics. The latter are the ones in which we are concerned. There was published in 1783 what is known as the North Hampton Table, which was constructed by Dr. Price from statistics in two parishes in the town of North Hampton. The Carlisle table was published in 1815, and constructed by Dr. Milne from the census of the population of two parishes in Carlisle in 1780, and the deaths in the same parishes from 1779 to 1787, inclusive. The population at the beginning of this period was 7877, and the deaths during the 9 years 1,840. A half a dozen Mortality Tables have been taken from the population statistics of Great Britain, espe-

cially in England. The original table is known as "The Healthy English Table." It was formed by Dr. Farr from the census returns in 1851, and the record of the births and deaths from 1848 to 1853, inclusive, in 63 of the healthiest registration districts of England and Wales. In all of these districts the mortality of the general population did not exceed the rate of 17 annual deaths to 1,000 living, and at the census of 1851 the total population of these selected districts was nearly one million persons, of whom about 493,000 were males and 503,000 were females.

In 1834 Mr. Morgan published a table formed from the experience of the Old Equitable Society. In 1843 there was published the experience of 17 life insurance companies now known as the Actuaries or the Combined Experience Table. The statistics from which this experience was compiled embraced nearly 84,000 policies, running from 1762 to 1833, of which nearly 14,000 were terminated by death. In 1868 Mr. Shepherd Homans constructed and published the American Experience Table of Mortality based upon the Experience of the Mutual Life Insurance Company of New York. This is the recognized standard mortality table of the United States for Life Insurance Companies, although valuations are permitted upon basis of net reserves derived from the Actuaries or the Combined Experience Table. In 1869 there was published in Great Britain what is known as the "Hm Table," meaning the experience of healthy males. About 180,000 policies were submitted, 11 per cent of which were on female lives. By excluding duplicate policies and female lives, the number was reduced to 140,000 healthy male lives. This Hm table was used almost exclusively in Canada and up to within recent years was used in Great Britain to the exclusion of any other table, excepting for annuities. Recently a new table has been published in Great Britain covering British assured lives from 1863 to 1893 and including all of the Life Insurance companies of that country. This is known as the O^m Table. After excluding the lives during the first 5 years, there were 411,340 exposed to risk for 5,324,862 years. This table has been adopted in Great Britain and also by the Canadian Parliament in 1907 as a standard for life insurance for those countries. The Actuarial Society of America has recently instituted an investigation into mortality as influenced by large policies and by term policies and the nationality of the insured as well as the occupation, residence, family history and personal disability. The National Fraternal Congress Table of Mortality has been fully explained. There have also been constructed permanent total disability tables, the first one being constructed by me in 1902, and which is given in this book. Another and more recently constructed table was from statistics furnished by me to Actuaries who combined these statistics with the American Experience Table. I have used the formulas adopted by the Actuaries in their construction of disability tables in combination with the American Experience Table, and give in this book the second table constructed according to the formulas prescribed by the Actuarial Society, or at least which have been accepted by that body. The original disability tables constructed by me are upon simple lines as compared with the complications of the second table constructed according to the formulas first worked out by an Actuary of Germany, and which has been accepted, as stated, by the Actuarial Society of America.

Of persons similarly selected within a given period of time out of a given number exposed to death a larger number will die at advanced than at younger ages. Common observation will confirm this statement, and the reason for the fact is found in the natural law which fixes a limit to human life.

The ordinary mortality table is constructed upon the assumption that the annual death rate increases with each year of advance in age. Represented by dollars and cents, the annually increasing rates of mortality (or probabilities of dying), given in

the aggregate mortality tables, are known as "natural premiums," because they are assumed to conform to the natural law that increases the insurance risk with the yearly advance in age.

In reality these assumptions are not in strict accord with facts, but reflect a fiction of much greater value to the life insurance business than if the theory literally followed the facts.

It is not true that there is a law of mortality as fixed and as definite as the law of gravitation, and it is not true that actual death rates amongst selected or unselected lives increase either regularly or progressively from year to year as age advances. Investigation and exposure of actual conditions show that the death rates of insured persons are both irregular and erratic when compared for different ages and for different years. All that can be stated truthfully is that the tendency to an increase in death rate with advance in age is present in every mortality experience after about age ten. For each of several years after birth the death rate decreases; then it increases for several years to about age eighteen; then the tendency is toward a slight decrease for about ten years, followed by an almost uniform rate for about ten or twelve years, after which the general tendency is toward an increase to about age fifty, with very marked and abrupt advances between ages fifty and seventy; while after the latter age there is considerable uniformity in the rate of increase for ten or fifteen years. An irregular line will fairly represent the rate at the very advanced ages, when men wear out and die from natural decay.

A table of mortality constructed from the exposures to death of female lives will differ from one constructed from the exposure to death of male lives in that the death rates of the former will be slightly higher for ages 15 to 25, and then somewhat lower for ages 25 to about 43, and then materially higher for ages about 43 to 50 or 53; afterward for all older ages the female death rate is below that of males. In all experiences, that have come under my observation, there is a pronounced "hump" in the female table for ages between 40 and 55. This is obviously due to the extra hazard from natural causes to which women in middle life are subjected. The unfavorable death rate for ages 18 to 25 is probably due to first child-birth, since it is absent in the experience of unmarried females.

The mortality table is the result of smoothing out the irregularities of actual death rates at the different ages, and therefore merely represents averages, and is consequently a fiction though constructed from real mortality experiences.

Little scientific use could be made of the actual facts, and hence resort to graded averages, rendering the fictitious results of more value than the absolute facts themselves.

NET PREMIUM is the net charge to provide for the promised benefit without any provision for expenses. The net premium is erroneously assumed to be divided into two parts, namely—the mortality element and the reserve element. As a matter of fact, net premium to provide for a death benefit is all for mortality, and it is erroneous to conclude that it is divided in the office, a part going for term mortality and a part going for accumulation. It is true that this is the effect of practical operation, but the division is not made in the office, but is made through the payment of claims and contributions as they are received; the excess being invested and accumulated at interest. If the premium were divided into mortality and reserve elements, then under a limited payment contract, when the contributions cease there would be no mortality element. When, as a fact, the accumulation becomes a single premium for the payment of mortality on the discontinuance of the contributions under a limited

$$P_{35} = \$16.62 = TX$$

$$|_{70-x} P_{35} = \$12.04 = SN$$

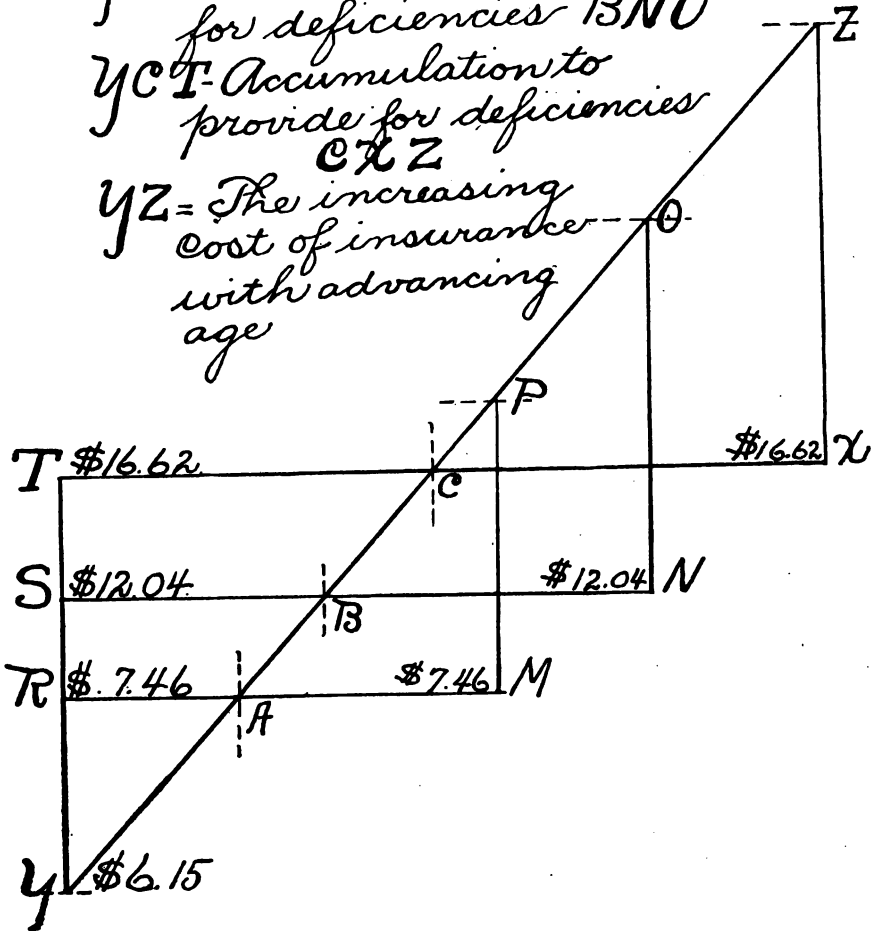
$$|_{50-x} P_{35} = \$7.46 = RM$$

YAR - Accumulation to provide for deficiencies AMP

YBS - Accumulation to provide for deficiencies BNO

YCT - Accumulation to provide for deficiencies CXZ

YZ = The increasing cost of insurance with advancing age



payment policy or certificate. It has been shown that the net premium is computed without any reference to reserve accumulation, and it is only after the net premium has been determined that the reserve accumulation can be ascertained. The net premium is in excess of the current cost of protection in the early years of the insurance contract, and in the later years the current cost of protection is in excess of the yearly net premium. This being true, it follows that in the early years there is an excess in contributions over the cost of the protection. This excess is laid away and accumulated at interest until the time when the cost of protection exceeds the yearly contributions when the accumulation is drawn upon to make good the deficiency. The diagram on the following page will clearly illustrate the working of the net premium.

There are three net premiums illustrated, one of \$7.46 for a term insurance to age 50; one for \$12.04, the annual premium for term insurance to age 70, and \$16.62, the annual net premium for whole life insurance on a person at age 35. The first horizontal line marked \$7.46 represents the level annual net premium for term insurance to age 50; the horizontal line marked \$12.04 represents the net level annual premium for term to age 70, while the horizontal line marked \$16.62 represents the level whole life annual premium for a person at age of entry 35 and promising \$1,000 payable at death whenever that event occur. Under the whole life policy and (provided the event occur prior to age 70 or age 50) under the term contract, the diagonal line marked YZ represents the annually increasing cost of protection, beginning at \$6.15 in the first year of age 35-36 and increasing annually to the end of life or to the end of the term of protection. The values represented by the diagonal line below the horizontal lines represents the period when the annual level contribution rate exceeds the annually increasing cost of protection. And the triangles to the left of the diagonal line, as explained in the diagram, represent the accumulated surplus when the contributions are in excess of the cost to make good the deficiencies represented by the triangles on the right of the diagonal line when the cost of protection exceeds the annual contribution. The amount of excess contribution is largest in the first year of insurance, and it decreases with the increase in the cost of protection until at the point where the diagonal line crosses the horizontal lines, when the cost of protection is equal to the annual level premiums. Above the intersection of these lines the cost of protection is in excess of the annual contribution, when there is a deficiency that is made good by drawing upon the accumulation from the previous excess contributions and interest.

THE LOADING of an insurance contract is the designation commonly used in referring to the amount added to the net premium for expense purposes. I have explained this matter in the chapter dealing with expenses.

THE NATURAL PREMIUM and THE LEVEL PREMIUM I have also explained in previous AND SUBSEQUENT pages.

THE RESERVE ordinarily is the required accumulation to maintain the contribution rates level and uniform during the period of protection as illustrated in the foregoing diagram, where for a term insurance to age 50 the reserve accumulation is represented by the triangle with the apex at A. The accumulation for term insurance to age 70 is represented by the triangle with the apex at B, while the reserve accumulation on a whole life insurance is represented by the triangle with the apex at C. It will be observed that the reserve accumulation varies with the duration and the period of protection. It also varies with the character of the contract. For example, a contract for term insurance to age 50 requires a very much less reserve than a whole

life contract, and an endowment insurance requires a much larger reserve accumulation than the whole life. The reserve accumulation on an endowment insurance is of a two-fold character; one part is for the purpose of maintaining the contribution rates level and uniform during the period when death benefit is promised and the other is for the accumulation of the endowment at the end of the period. So also is the reserve on limited payment contracts of a dual character, in that it is a reserve for a term insurance during the premium-paying period and a reserve accumulation for the purpose of providing a single premium at the end of the premium-paying period. As a matter of fact, whole life insurance may be considered as a term insurance to the limiting age of the mortality table, with an endowment to the survivors at that age; therefore, the reserve could be considered as of dual character, in that it would provide for term insurance to the end of the mortality table and for the endowment payable to the survivors at that age. The reserve accumulation not only depends upon the character of the contract and the duration of the period of protection, but also upon the rate of interest and mortality assumption in the computation of the contribution rates. However, there may be identical reserve accumulations where the interest assumption is the same, but the mortality assumptions are different. To illustrate this point, I give the yearly cost of insurance or death rate per \$1,000 according to three different assumed tables; the first being designated as "Normal Mortality," the second "Sub-Normal Mortality," and the third "Super-Normal Mortality." That is to say, taking the first table as normal, the second one being lower is termed sub-normal and the third one being higher is termed super-normal. I give below the annual death rate per \$1,000 for every five years from age 20 to 95 inclusive:

DEATH RATE PER 1,000.

Ages	Normal Mortality (1)	Sub-normal Mortality. (2)	Super-normal Mortality. (3)
20	5.72	3.57	7.97
25	7.07	4.82	9.43
30	7.71	5.33	10.20
35	8.62	6.08	11.28
40	10.01	7.27	12.89
45	12.24	9.21	15.42
50	15.72	12.34	19.27
55	21.23	17.37	25.28
60	29.83	25.31	34.58
65	43.27	37.84	48.97
70	64.10	57.40	71.13
75	96.04	87.56	104.95
80	144.26	133.25	155.82
85	215.22	200.69	230.48
90	315.79	296.47	336.08
95	449.61	424.28	476.21

When the reserves are worked out by the mortality tables, for which the above death rates are given, it is found that they are identical. That is to say, that at the end of each year the terminal reserve is the same whether we assume normal mortality, sub-normal or super-normal mortality. On a 3 per cent basis the following are the annual premiums per \$1,000 deduced from the three tables. It will be found that the premiums of the sub-normal mortality are lower than those derived from normal,

while those from the super-normal are higher than those from the normal, as will be seen from the following :

ANNUAL PREMIUM PER \$1,000.

Ages.	Normal Mortality. (1)	Sub-normal Mortality. (2)	Super-normal Mortality. (3)
20	14.28	12.17	16.40
25	16.28	14.12	18.55
30	18.73	16.45	21.13
35	21.86	19.43	24.41
40	25.89	23.27	28.64
45	31.15	28.28	34.17
50	38.09	34.88	41.45
55	47.37	43.73	51.21
60	59.97	55.73	64.43
65	77.32	72.24	82.63
70	101.49	95.27	108.03
75	135.51	127.66	143.73
80	183.54	173.42	194.19
85	250.87	237.54	264.91
90	343.19	325.48	361.81
95	462.34	438.81	486.87

For emphasis let me repeat that when the reserves are worked out on the basis of the above contribution rates and the mortality assumed in the respective tables, it is found that they are identical; that is to say, the terminal reserve accumulated at the end of each year is the same whether we assume normal mortality, sub-normal or super-normal mortality, but assuming the rate of contribution as above given. However, if we use the normal mortality in connection with the sub-normal contribution rates, then, of course, the reserve accumulation would be different from that where we use the sub-normal mortality in connection with the sub-normal contribution. Were we to employ the normal mortality in a valuation, while having as a basis the contribution rates of the sub-normal mortality, then the reserve would be inadequate. This reference is of importance, because of the often expressed idea that the net reserve accumulation is the same or about the same whether we make the valuation on the basis of the American Experience Table of Mortality, or on the National Fraternal Congress Table of Mortality. This is true only when the contribution rates are taken as derived from the respective tables. Were we to make a valuation on the basis of the contribution rates of the National Fraternal Congress Table, while employing the American Experience Table of Mortality as the basis for the valuation, then we would find that the reserve would be inadequate, but if we were to make a valuation, using the contribution rates derived from the National Fraternal Congress Table and employing contribution rates according to that table, we should obtain reserve accumulation about the same as when we employ the contribution rates derived from the American Experience Table of Mortality and based on the valuation upon the death rate according to that table. This may be better understood by making an example from the three tables above given.

It will be observed that the annual rate on 3 per cent basis by the sub-normal mortality table for age 20 is \$12.17 per \$1,000 of protection, while the annual net rate per \$1,000 according to the super-normal is \$16.40. Here there is a difference of \$4.23 per \$1,000 in net premiums, and yet the reserve accumulation at the end of any

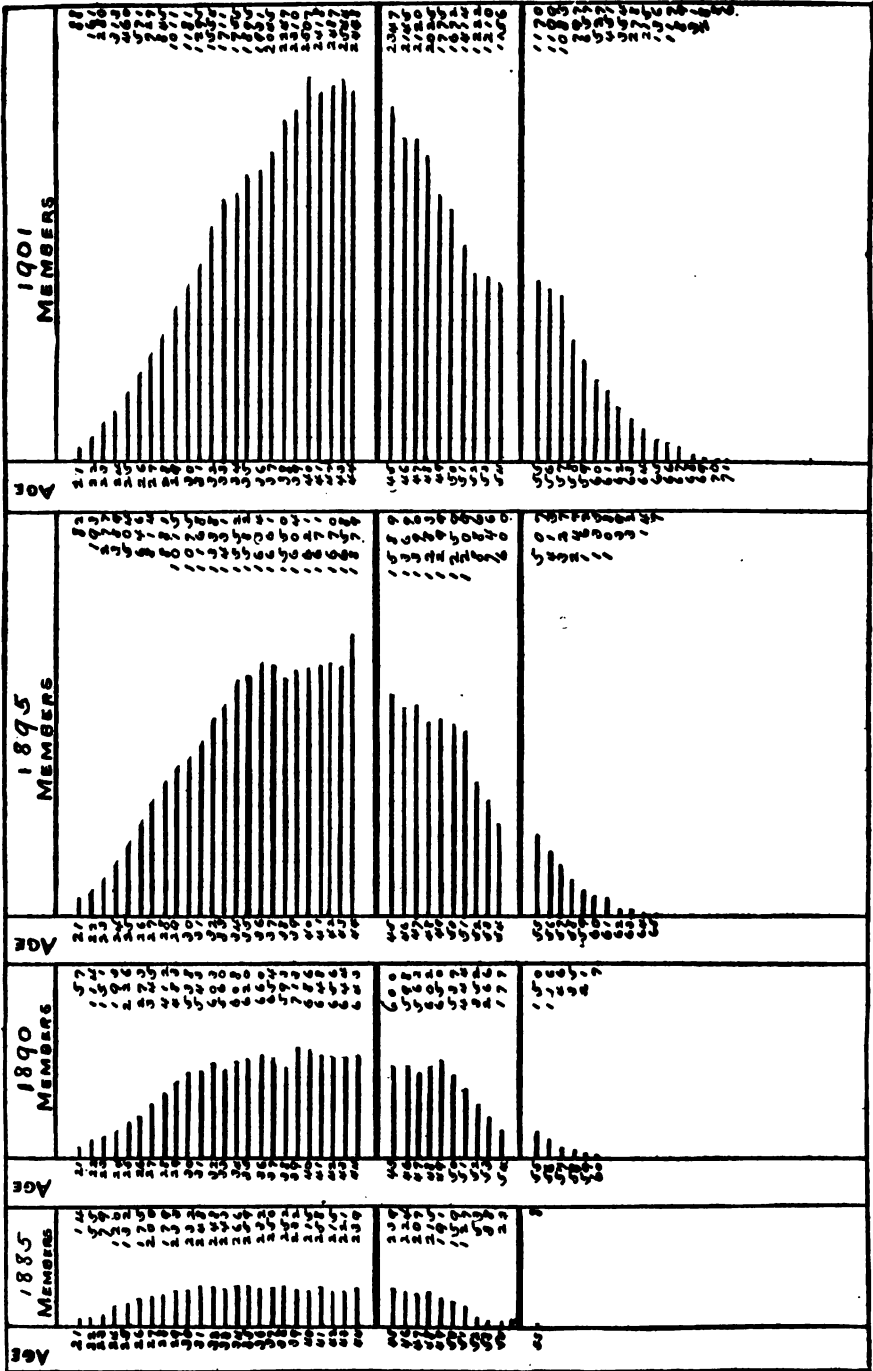
year is identical for both premiums; that is to say, the reserve accumulation for a net premium of \$12.17 at the end of, say the tenth year, employing the sub-normal mortality assumption in the determination of the amount, is identical with the reserve accumulation by the premium of \$16.40 at the end of the tenth year. In other words, as a standard of net valuation, the table which produces the lower premium would give as large an accumulation, as a measure of commercial solvency, as would the table which produces the larger premium. Similarly the same reserve would be accumulated by the premium of \$14.23, which is derived from the normal mortality table. The example will emphasize this statement:

ENTRY AGE 20.

	Annual Premium	Value of \$1,000 Insurance, End of 10th Year.	Value Future Premiums.	Required Accumulation, End of 10th Year.
Normal.....	\$14.23	\$342.00	\$299.00	\$43.00
Sub-normal.....	12.17	312.00	269.00	43.00
Super-normal.....	16.40	370.00	327.00	43.00

All of the above values are based on 3 per cent interest assumption. The above accumulation at the end of 10 years is much less than the reserve of the American Experience, the National Fraternal Congress or the Actuaries' Table of Mortality with 4 per cent interest assumption. The reserves per \$1,000 being, respectively, \$65, \$69 and \$73. It will be observed that the reserve by the National Fraternal Congress Table is \$4.00 higher than that of the American Experience and \$4.00 less than that of the Actuaries' Table. Later on this showing will be given further attention.

In practical operation the largest reserve accumulation is required on the protection for the members at advanced ages, because ordinarily it is of the longest duration. In total amount the required reserve accumulation is largest for the middle ages, because in the course of operation the membership of any large insurance company or society is greater at these ages, with the tendency, of course, to mass the membership always at the more advanced ages. In this connection it will be interesting to reproduce a diagram made by Carlan A. Brown, Grand Master Workman of the Massachusetts Ancient Order of Workmen, in an article published in Vol. 2 of the Criterion. He gives the ages attained and the number of members and illustrations for the grand jurisdiction of the Ancient Workmen of Massachusetts, for the years 1885, 1890, 1895, 1901. The diagram graphically represents the distribution of membership and the progress toward massing at the advanced ages. The membership is divided into three sections for ages 18-44, 45-54, and 55 and older. A more striking illustration could not be made of the passing of members from the maximum age of admission into the higher ages. The diagram tells the tale of increasing mortality cost and the reason for increasing rate or the number of assessments under defective plan. The purpose of the illustration was to show that the number of assessments which would provide for the mortality claims in 1885 when the membership was at the younger ages would not provide for the claims in 1890, when they had progressed toward the advanced ages, nor in 1895, when the massing of the members was still greater at the advanced ages, and especially would be inadequate in 1901 when the number of members older than age 55 would exceed the total number of members below age 50 in 1885. I reproduce the diagram for its educational effect in many



directions. In this connection I also reproduce an article furnished to May and June issue of the Criterion in 1904 by Professor S. A. Stillwell, Actuary then and now for the Ohio Insurance Department. This article relates to reserve accumulation under the American Experience Table of Mortality, the National Fraternal Congress Table and the Actuaries' Table, and is supplemental to the showing made for the normal, sub-normal and super-normal mortality tables.

In an exhibit of reserves in the Criterion of March-April, credit is given me for the special method of exhibiting these reserves at different ages on the three mortality tables—American, Actuaries', and National Fraternal Congress—with compound interest at same rate in all cases. The purpose of the exhibit would, I think, be more readily seen if, while retaining the same figures and headings, the National Fraternal Congress reserves were put in the dark-faced type and the Actuaries' reserves in italics, as below (leaving the American in ordinary type), as one can follow the dark-faced type more easily than the italics. The dark-faced type will be found to be sandwiched, as it were, almost throughout between the other two. Only at the attained ages from 50 to 65 would the dark-faced type move up into the first or lowest place in the reserves. I hardly need state that these reserves are for whole life policies with level rates:

FOUR PER CENT ACCUMULATION ON \$1,000.

ENTRY AGE 20.

At End of Years—

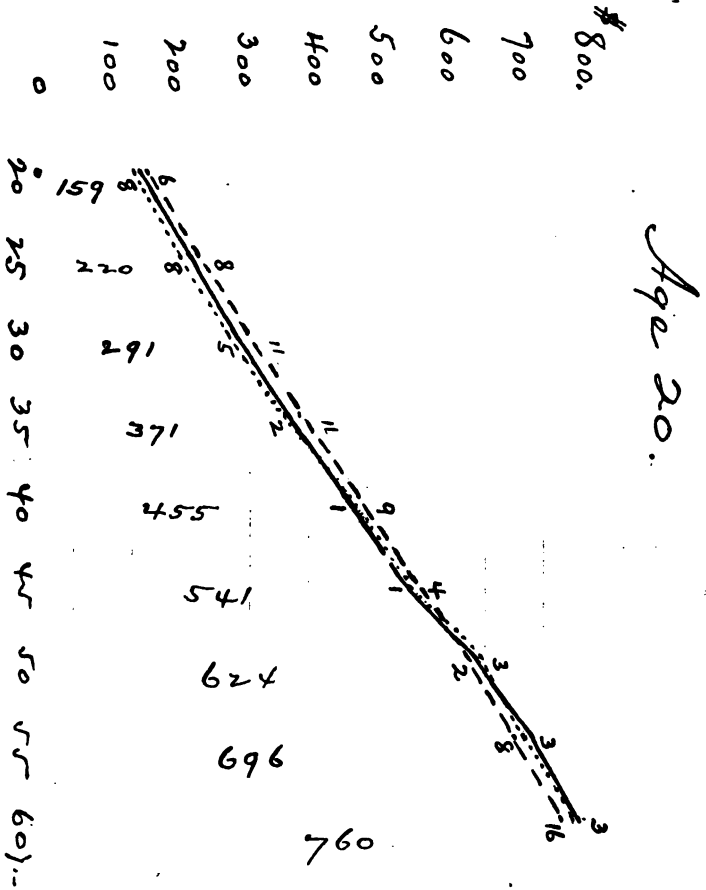
1	2	3	4	5	10	15	20	25	30	35	40	45	50	55	60
5	11	1	23	29	65	108	159	220	291	371	455	541	<i>624</i>	<i>696</i>	760
6	12	18	25	31	69	114	167	228	296	373	456	542	626	704	776
<i>6</i>	<i>13</i>	<i>19</i>	<i>26</i>	<i>33</i>	<i>73</i>	<i>119</i>	<i>173</i>	<i>236</i>	<i>307</i>	<i>384</i>	<i>465</i>	<i>546</i>	629	707	779

ENTRY AGE 40.

At End of Years—

1	2	3	4	5	10	15	20	25	30	35	40	45
14	28	42	57	73	156	247	346	449	<i>545</i>	<i>632</i>	<i>710</i>	<i>780</i>
14	28	43	58	73	157	252	352	451	551	648	734	808
<i>14</i>	<i>29</i>	<i>45</i>	<i>61</i>	<i>77</i>	<i>163</i>	<i>256</i>	<i>353</i>	<i>456</i>	556	648	735	814

To illustrate to the eye the slight variations in values, lines are drawn below for age 20, showing reserves by the three tables for several quin-quennial years, and extending to the attained age of 80. The continuous line represents the National Fraternal Congress line of reserves; the dotted line represents the American, and the dashed line represents the Actuaries'. Similar lines may be drawn for other ages



For earlier years and later year of policies than are given in the chart, the National Fraternal Congress line runs between the American line and the Actuaries' line. It will be observed, by following closely the dotted line and the dashed line that the American and Actuaries' reserves are determined not to be on friendly terms, for when one approaches the other it is not to coincide with it, but to cross it and remain as far apart as ever. It is only at or near this crossing point of the American and Actuaries' reserves that the National Fraternal Congress reserves fall below the other two. If it be said that the National Fraternal Congress reserves are erratic at this place, then it may also be said that the other two—American and Actuaries'—are somewhat unsteady. If the lines be examined closely it will be found that the American and National Fraternal Congress lines almost coincide throughout their entire extent. The differences between the lines are indicated in the chart by small numbers placed below and above the three lines.

A table of differences below will show how much more closely the National Fraternal Congress reserves follow the American than they follow the Actuaries' :

FOR AGE 20.

At End of Years—	Difference Between N. F. C. and American.	Difference Between N. F. C. and Actuaries'.
5	+\$2.00	-\$2.00
10	+ 4.00	- 4.00
15	+ 6.00	- 5.00
20	+ 8.00	- 6.00
25	+ 8.00	- 8.00
30	+ 5.00	-11.00
35	+ 2.00	-11.00
40	- 1.00	-10.00
45	- 1.00	- 5.00
50	- 3.00	+ 2.00
55	+ 3.00	+11.00
60	+ 3.00	+19.00

Where both columns are minus (—) the National Fraternal Congress reserves fall slightly below the other two, and where both columns are plus (+) the National Fraternal Congress reserves are higher than the other two.

Below will be found an exhibit of net life level rates by the three mortality tables with four (4) per cent compound interest, and the percentages to be taken of the Actuaries' to produce the National Fraternal Congress, and the same with respect to the American, showing that in no instance is the National Fraternal Congress net level rate less than eighty (80) per cent of that by the American or Actuaries' :

Ages.	Actuaries' 4% Net Level Rates.	American 4% Net Level Rates.	N. F. C. 4% Net Level Rates.	Ratio of N. F. C. to Actuaries.	Ratio of N. F. C. to American.
20	\$12.95	\$12.67	\$10.34	80.0%	81.4%
30	16.97	16.21	13.96	82.1%	86.2%
40	23.68	22.35	20.11	84.8%	89.8%
50	35.78	33.70	30.91	86.3%	91.7%
60	57.56	55.45	51.13	88.7%	92.1%

Comparing also the National Fraternal Congress 4 per cent net life level rates with the same by the American mortality table and 3½ per cent interest (which is now the basis for rates in nearly all the old line companies), we obtain the following table:

Ages.	American 3½%.	N. F. C. 4%.	Ratio.
20	\$13.48	\$10.34	76.6%
30	17.19	13.96	81.2%
40	23.50	20.11	85.6%
50	34.99	30.91	88.3%
60	56.83	51.13	90.0%

Hence, except at very early ages, the National Fraternal Congress 4 per cent net life level rates are greater than 80 per cent of the American 3½ per cent net rates.

EXPECTATION OF LIFE means the average number of years which persons of a certain age will survive. It has no relation to the time the individual will probably die, nor to the time when death is most probable. The individual may die today or tomorrow or

25 years hence, while his life expectancy may be 10 years or 20 years or 40 years. To find the years of life expectancy, sum the number in the column of members living given in the mortality table from the age one year older than the given age to the end of the table, and then divide the total by the number living at the given age. This will give what is known as the curtate expectation of life. The complete expectation is obtained by adding five-tenths to the number of years for the curtate expectation.

INSURANCE COST. The illustrations given correspond to the natural premiums or probabilities of dying per 1,000, as given in table 1 of the appendix to this book. Technically, and as given in the text-book, insurance cost is a product of the probability of dying by the difference between the sum insured and the reserve accumulation.

For example, Suppose there are one million of insurants at age 35, and at the end of the year on whole life certificates there is \$11.20 per \$1,000 reserve accumulation, or \$11,200 on the \$1,000,000 of protection. If we subtract the \$11,200 from the \$1,000,000 we have remaining \$988,800 which is technically called the amount "at risk;" that is to say, it is assumed that the company holds \$11,200 of the funds of members, and consequently the amount at risk is the face value of the certificates less the reserve accumulation, making as stated, net amount at risk of \$988,800 on the \$1,000,000 of protection. The probability of dying at age 35 is .00615, and multiplying this by the \$988,800 we obtain \$6,081 as the cost of insurance on \$1,000,000 of protection, or \$6.08 per \$1,000.

It may be further added that if the cost of the protection is \$6.08, and the whole life level net premium at age 35 is \$16.62; if we improve the latter for one year at 4 per cent, we get \$17.28, and subtracting the cost of protection, \$6.08, we have \$11.20 per \$1,000 as the reserve accumulation, or as first stated, \$11,200 on \$1,000,000 of protection.

Taking \$6.15 per \$1,000 as the cost of protection, the following example will illustrate the method of determining the reserve accumulation. We will take the tabular number living, 92,215, at age 35, and assume that each one carries \$1,000, and that the annual net contribution is \$16.62, then we have the following exhibit:

92,215 × \$16.62 = Premium Payments	\$1,532,613.30
Interest at 4 per cent for 1 year	61,304.50
Premium and Interest end of first year	1,593,917.80
92,215 × \$6.15 = Death Claims	567,000.00
Accumulation end of year	1,026,917.80

We began the year with \$92,215,000 protection and there was \$567,000 in claims, leaving at the end of the year \$91,648,000 of protection. Dividing the \$1,026,917.80 by 91,648 we obtain the reserve at the end of the year, which is \$11.20 per \$1,000, and precisely the same as obtained by the method of subtracting the cost of the protection as technically determined from the annual premium and accrued interest for one year.

If the single premium of \$301.67 is illustrated, instead of the annual premium of \$16.62, we would have this example:

92,215 × \$301.67 = premiums	\$27,818,663.44
Interest one year	1,112,746.54
Interest and premium	28,931,409.98
92,215 × \$6.15 = claims	567,000.00
Total accumulation	28,364,409.98
Divided by 91,648	309.49

or the single premium at end of the first year which is the reserve for the 91,648 survivors of the original 92,215 entrants.

In every case the results of the two methods in respect of reserve accumulation are identical, and since there are advantages to be gained by assuming that the cost of protection is the product of the probability of dying by the difference between the sum insured and the reserve accumulation, I would not occupy space to give my view concerning the matter were it not that a principle is involved in regard to the conduct of Fraternal Beneficiary Societies under existing conditions.

However, from a technical standpoint, I contend that the above illustration which assumes that the probability of dying corresponds to the cost of protection is in accord with actual practice.

In no office do officials pay a part of the claims from current contributions and then make draft upon the reserve accumulation for a portion of the claims. As a matter of fact, the claims are paid out of current contributions, and the reserve accumulation is permitted to remain invested for the benefit of the survivors.

I assert that the method illustrated, being in accord with practice, is the better one, and is technically correct.

If we analyze the individual position of one of the survivors, this is found:

Premium Payment	\$16.62
Interest=(\$16.62×.04) .....	.66
Premium and Interest	17.28
Share of Claims	6.15
Surplus from Premium and Interest	11.13
Mortuary Accretion .....	.07
Reserve	\$11.20

The "mortuary accretion" comes from the share of each survivor in the surplus from contribution and interest of the 567 who died. Each one of the 567 paid \$16.62, which earned 66 cents, and the total of \$17.28, less \$6.15, the share of each in the claims, yielded a surplus at the end of the year of \$11.13, exactly the same as for each survivor. The total for the 567 who died was:

$$567 \times \$11.13 = \$6,311.00,$$

and $6,311 \div 91,648 = .07$ for each survivor, which added to the surplus for each, \$11.13, makes the reserve \$11.20.

The contention that the reserve belongs to the member has led many to the conclusion that it should be returned *in addition* to the sum insured. This conclusion could not result from the true exposition that, under ordinary computations, the reserve is not to be paid to beneficiaries of deceased members, but upon the assumption that it will be appropriated for the benefit of survivors in the way of "mortuary increment."

At the advanced ages the "mortuary increment" is much larger than the "interest increment" for accumulation.

My contention is supported further by the general employment of the *u* and *k* columns in computing reserves. With these factors the reserves per \$1,000 are determined precisely as illustrated for the \$16.62 annual rate where \$92,215,000 were involved. In the illustration the \$567,000 of claims were paid from the current contributions, including \$6.15 per \$1,000 paid by the 567 who died. The \$11.20 of accumulation was retained in the reserve fund for the benefit of the 91,648 survivors.

In computing reserves per 1,000, the accumulation factor, *u*, corresponds to the interest factor in the illustration, while the decrement factor, *k*, corresponds to the deductions for claims. The *u* and the *k* are larger than the interest and mortality

rates in order to account for the "mortuary increment." The u and k factors are thus developed:

$$\begin{aligned} \text{Let } l_{35} &= 92,215 = \text{Insurants at age 35.} \\ P_{35} &= \$16.62 = \text{Premium.} \\ 1+i &= 1.04 = (i = \text{interest}). \\ d_{35} &= 567 = \text{Members died.} \\ {}_1v_{35} &= \text{Accumulation or reserve. Then} \\ & l_{35} \times P_{35} \times (1+i) - d_{35} = {}_1v_{35}. \end{aligned}$$

From the illustration it was seen that the total reserve accumulation at the end of the year, \$1,026,917.80, was divided between the 91,648 survivors, giving \$11.20 to each per \$1,000 of insurance. Now let

$$l_{36} = \text{survivors} = l_{35+1},$$

then

$$\frac{l_{35} \times P_{35} \times (1+i) - d_{35}}{l_{35}} = \frac{{}_1v_{35}}{l_{35}}$$

but,

$$\frac{l_{35}}{l_{35}} = \frac{1}{p_{35}}. \quad \text{And } \frac{d_{35}}{l_{35}} = \frac{d_{35}}{l_{35}} \times \frac{l_{35}}{l_{35}}$$

substituting, we have,

$$P_{35} \times \frac{1+i}{p_{35}} = \frac{q_{35}}{p_{35}} = P_{35} \times u_{35} - k_{35} = {}_1v_{35}.$$

By reference to Table 1, we find $q_{35} = .0061487$; p_{35} being its complement = .9938513. Substituting, we have $P_{35} \times 1.04 \div .9938513 = 1.04643 = u_{35}$, and $.0061487 \div .9938513 = .006187$ and $6.187 = 1,000k_{35}$. Making an example, we have,

P_{35} = Premium	\$ 16.62
u_{35} = Accumulation Factor	1.04643
$P_{35} \times u_{35}$ = Accumulation end of year	17.39
k_{35} = Decrement Factor	6.19
${}_1v_{35}$ = Reserve at end of first year	11.20

Very generally the u and k columns are employed to calculate in advance the reserves per \$1,000 for use in "net valuations," and, as seen, the k is directly derived from the probability of dying, or death rate, and this is the decrement factor as was q_x in the first illustration.

Notwithstanding the apparently good arguments to support my position, I stand alone in undertaking to maintain it.

Elizur Wright, in 1850, asserted that the reserve was of the nature of a savings bank deposit, and when the insured saw fit to break his contract he had a right to demand the surrender of his reserve (less a reasonable surrender charge), and from that time to now an individual interest in the reserve has been recognized.

In such circumstances it was natural to develop the theory that the insurance company held the reserve in trust to be paid to beneficiaries at the death of the member, or returned to the member on his withdrawal. In this view the reserve is truly a "reinsurance fund," belonging to the insured as much as a bank deposit.

If carried to this logical conclusion, then there should be an individual accounting and a right of withdrawal of credits on notice.

I cannot subscribe to such a theory. It would be subversive of insurance principles.

Present payments to provide for the inevitable future increase in the cost of insurance are as much the property of the society or company as present payments for current insurance cost. While present payments for future cost represent present over-payments of current cost, later on as age increases current cost will exceed the then present payments, and a deficiency will result between current collections and

current claims, when the previous advance payments are brought into requisition to cover the deficiency. The early excess contributions over current cost are absolutely necessary under the level premium plan, and are as much a part of the insurance funds as are the portions of contributions used for current cost. If the insured desires to change or annul his contract, by agreement that will not injure the society or company, a return might be made of the excess accumulation.

I arrive at the equity of surrender values from a different course of reasoning. Thus:

All insurance is cooperative, the very object of it being to distribute losses.

It proceeds on the theory of averages, and, therefore, an insurance society which is scientifically operated assumes as a unit the entire group of members who enter at a particular age, during a particular year, on the same form of contract.

All payments made by members of the group are treated as items of an individual account.

The term "individual reserve" is largely a misnomer, as it simply means the share of each individual of the group in the entire reserve for the group. It becomes of importance chiefly when a member desires to change the form of his contract from whole life protection; for instance, to temporary protection, the latter requiring a smaller reserve. It is necessary in such circumstances to make an individual adjustment with this particular member, which is done by returning to him his individual share of the reserve, according to his previous contract, or a definite portion thereof:

Let us suppose that he entered originally at age 30 and desired a life contract under the level premium system. The net annual price charged him would be \$13.96 annually, by the National Fraternal Congress Table, and four per cent interest.

At the end of twenty years he decides that he no longer wants the protection.

Had he originally applied for a twenty-year contract, he would have been charged only \$6.80 annually.

He has, therefore, paid \$7.16 a year in excess of the amount required for the protection furnished.

This excess, at least in part, may be returned if the demands of equity are to be satisfied.

The larger premium was collected on the assumption that the member's certificate would eventually become a claim.

This assumption is nullified by his withdrawal, and the accumulation provided in conformity therewith may not be retained.

When the member dies, on the contrary, the assumption still holds. There is no change in the contract. The certificate becomes a claim. In what year this latter occurs is immaterial.

Were it not for the uncertainty of the date of death there would be no such thing as life insurance.

The insured persons enter into mutual agreement, under the terms of a whole life insurance contract, to remain in the association until death, whether it occur soon or late.

The rates of contribution are based upon persistence until death, and upon such conditions they are adequate to provide for the payment of promised benefits at death.

A payment of more than the promised benefits, by a return of a portion of the contributed assessments, would upset all calculations and render the rates of contribution insufficient to provide for the payment of the future promised benefits.

Maturity of the whole life contract by death fulfills the conditions and terms of the agreement.

The surrender of the contract abrogates the terms of the original agreement, and renders unnecessary the fund which has been accumulated to insure its integrity were it continued to maturity at death.

So long as the contracts of insurance are in force, accumulated funds must be held in common and cannot be considered as "individual deposits," of the same character as "deposits in a savings bank."

Much misconception of the character and function of the reserve fund has resulted from efforts to explain it.

The first wrong impression came from the so-called "division of the level premium into its three elements—Expense, Mortality and Reserve."

Taking age 40 and an "Old Line" premium, for example, this "division" was made:

Gross Premium	Expense Element	Mortality Element	Reserve Element
\$31.57	\$7.89	\$9.82	\$13.86

To this day there are many who believe the above to be a permanent division, and that annually the amount of \$13.86 is set aside from the gross premium for continuous accumulation into a reserve fund, "which goes on accumulating from generation to generation long after those who have contributed to it have passed away."

It is not unusual to find the serious, and evidently honest, statement in the literature of Fraternal Societies, that "the principal of the reserve accumulation is never touched—only the interest is used to keep down the increasing cost at old age."

This misapprehension largely proceeds from two sources.

(1) The erroneous impression made by such as the foregoing "division" of the level premium.

(2) The superficial consideration given to the workings of the reserve by those who essay to discuss it.

For the purpose of net valuation, terminal reserve values have been computed, and these values have been very generally published, and are often used in making comparisons of Mortality Tables, as well as for many illustrations in life insurance discussion.

Such publication and use are appropriate and of material benefit, but, unfortunately, they have led those who jump to conclusions into very erroneous statements.

The truth of it is, the breaking up of the reserve fund into individual credits or values can only serve for analytical purposes, and for accounting between "tenants in common" when the Common Fund is to be divided or apportioned.

So, also, is it a purely analytical process when the level premium is split into its "elements" of "Expense," "Mortality," and "Reserve."

No practical results can be arrived at by considering the reserve as "an individual deposit," nor in viewing it as separate and distinct from the "Mortality" element.

It would be equally practical to endeavor to make separate use of hydrogen and oxygen and obtain the results derived from water, as to try to work out life insurance problems by separately considering the "Reserve" and "Mortality" element of a level premium, or by undertaking to break up the general reserve accumulation into individual credits of the nature of deposits in bank.

There are but two parts to a level premium, which are the "Expense" portion and the "Mortality" portion.

The "Reserve" element is a fiction—a product of analysis.

When the expense portion is deducted, the balance (called the "Net Premium") is provided, by calculation, for the payment of death losses, for "Mortality" purposes, and for nothing else.

If the death losses are less than anticipated, there results a surplus which may be returned to members.

However, the whole of the "net premium" is primarily intended solely for the payment of death claims, and there are no pre-determined portions of it for "Mortality" and "Reserve."

The idea should be gotten rid of that there are "Reserve" and "Mortality" elements to a level premium, if there is to be a clear conception of its real and true function.

The idea should be gotten rid of that the so-called reserve accumulation is a fund of individual credits, if its true function is to be understood.

The level premium plan, subjected to critical analysis, will reveal the following conditions as a business proposition:

First, the individual insurant, as such, is not considered in the determination of the level premium. It would be a gambling venture pure and simple to undertake to insure one life or to enter into an insurance contract with one person.

Second, it requires a considerable number of persons associated together in mutual cooperation for practical and successful insurance business conduct. In such circumstances only the mass is considered in reference to contributions, and necessarily all resulting accumulations constitute a fund in common against which individual demand could not be made unless the association went into liquidation, and then each member should share in the general distribution according to the character of contracts carried.

As stated, I have made an argument in the case because of the importance to the Fraternal Societies. It is of small moment to life companies whether the one or the other explanation of the working of the level premium is correct. But the very existence of many of the Fraternal Societies depends upon the construction that will maintain their funds in common for the sole purpose of providing for the payment of claims.

If voluntarily or through compulsion, Fraternal Societies undertake to segregate the funds and allow credits to individual members, they must abandon the original conception of fraternal protection, and should base their contribution rates on a higher table of mortality than that of the National Fraternal Congress and 4 per cent interest assumption.

THE NET VALUE of a certificate or policy corresponds to the reserve accumulation. To put it another way, the net value represents the difference between the present value of the benefit and the present value of future contributions, under the prospective method of valuation. Under the retrospective method of valuation the net value is represented by the difference between the value of accumulated claims and the value of accumulated contributions.

SURRENDER VALUE is the amount of the reserve accumulation which is used as the single premium for the purchase either of paid-up insurance or extended insurance, or for a loan, or given altogether for the surrender of the certificate in settlement of the contract. The amount deducted from the reserve is called surrender charge, and this surrender charge is determined by various methods. In some offices a flat amount as \$10 per thousand is deducted from the reserve. In other cases, there is a percentage of the reserve taken as a surrender value; thus 10 per cent is deducted for the surrender charge and 90 per cent used as the single premium for the purchase of the surrender value. If the reserve were \$100, and 90 per cent used as a surrender value, then \$90 could be used either as a payment in cash, or as a loan, less one annual premium, or for the purchase of paid-up insurance, or for the purchase of extended insurance. Let it be noticed that a "surrender value" includes a cash surrender value,

a loan surrender value, a paid-up insurance surrender value, or an extended insurance surrender value.

LOANS. Until Elizur Wright secured the enactment of non-forfeiture laws in Massachusetts, the life companies (with one or two exceptions) allowed no surrender values—not even paid-up or extended insurance. From giving nothing the companies went to the extreme of paying on demand cash to the amount of the reserve. From this extreme there was a reaction to the extent of deducting one annual premium from the cash surrender value, and the amount paid was called a “loan.” The loans are seldom paid off by the policy-holder, and consequently the real object of life insurance is largely defeated through the reduction in benefits by the lien against the policy.

A recent compilation by the Association of Life Insurance Presidents shows that of reserves amounting to about three and one-half billions of dollars, \$590,000,000 had been loaned to policy-holders, or about 16 per cent. The amount of the policies is reduced by the total of the loans and the insurance for the protection of beneficiaries is five hundred and ninety millions less than the face value of the policies.

In answer to this last statement it may be asserted truly that were it not for the loan privilege on insurance policies, the policy-holders would be forced often to borrow at a great sacrifice, and certainly at a less favorable rate of interest than granted by the life companies, and in the end the debt would exist, and many times with the life insurance policy as collateral and subject to reduction by payment of the debt.

When the policy-holder obtains a loan on his policy he seldom repays it, and often permits it to accumulate at compound interest, rapidly increasing the lien and finally rendering the promised benefit very disappointing to those dependent upon it for relief or support. A loan obtained from any other source is not permitted to run indefinitely, and at least the interest must be paid periodically, so that should the debt be not discharged it will not be increased by compound interest additions. Where the company requires payment of interest with the payment of each premium the interest of the beneficiary is better protected.

However, if we are to accept the theory that the reserve is held by the company as an advance accumulation from the insured to be used in part payment of the promised benefit, then the beneficiary receives from the company only the difference between the sum insured and the reserve accumulation.

Therefore, when the beneficiary is paid the face value of the policy, that part representing the amount of the reserve accumulation is a return of money belonging to the insured and simply held by the company in trust.

If the insured, previous to death, believed he could make immediate use of this trust fund for the advantage of his family, and which would be better for his beneficiaries than to delay its payment until he died, why should he be denied the privilege of withdrawing the reserve and leave as protection the amount assumed as the insurance risk?

It seems to me that the Life Insurance Presidents are in no position to throw obstacles in the way of policy loans, while they assert that the reserve is an individual credit. The president of a savings bank would be as much justified in preventing a depositor from withdrawing his deposit on the ground that his family would be more benefited by leaving it to accumulate until his death.

To hold that the reserve is an individual credit produces such inconsistency between theory and practice as to warrant my criticism of the theory.

In readjustments by fraternal beneficiary societies, loans or liens have been entered against certificates, at the option of members, either to the amount of the value of the difference between the rates of contribution at attained and entry ages, or the

amount of one-half (or other portion) of the monthly contribution rate fixed by the readjustment. In some cases the lien is increased by compound interest; in others by simple interest; in others no interest is charged, according to whether or not the advice of an actuary or the suggestion of a delegate has been accepted.

Members have elected to reduce the insurance protection by the amount of the liens, and then the management has had much trouble with beneficiaries who expected the face value of certificates.

In my opinion the lamented President Greene, of the Connecticut Mutual, was right in refusing to pay cash or make loans on policies, and confined surrender values to paid-up and extended insurance. He also correctly contended that the funds of a life insurance company or society were held for the purpose of paying the benefits promised for the protection of dependants—that the funds were held in common for the advantage of all the insured persons according to their contributions toward such funds.

Theoretically there is no objection to making a loan to the policy-holder from the reserve within the net value of the policy.

Practically there is often protection to the insurance by granting loans for the purpose of paying premiums, especially when the insured is unable to meet them through loss of wage or salary because of disability or otherwise. I have recommended loans to the amount of monthly or annual contributions when there was accumulation from excess of past contributions. This has been done because the loan was a protection to the insurance protection. Nevertheless, it is somewhat inconsistent for the reason that it recognizes an individual interest in the reserve accumulation; and the practice, from a legal standpoint, would establish the right to individual credit and segregation. The possible saving of the protection for dependants is the excuse for it.

NON-FORFEITABLE means that a policy or certificate will not be forfeited or cancelled after two, three or four years, as the provisions may be, but that a surrender value is given in the way of paid-up insurance or extended insurance, even though the member make no application for such a surrender value.

INCONTESTABLE means that a policy or certificate is incontestable when, by provisions and conditions of the contract, payments of the benefits cannot be excluded by the company or society for any cause, except the non-payment of premiums or contributions.

LAPSE in life insurance means the termination of a contract and forfeiture of the value; that is of the accumulation thereunder, by failure to make contribution within the time agreed. Lapse does not include all terminations by voluntary withdrawal, before the end of the period of protection; for example—if the conditions of the contract are such that it has a withdrawal value (that is, a surrender value) and the member chooses to withdraw, or if the contract is non-forfeitable and the insurance company or society must by the terms of the contract give a surrender value, then it is not correct to say that the member lapsed, but that the certificate was terminated by "surrender." Hence, a lapsed contract is one where the insured discontinues contributions and receives no surrender value but forfeits all reserve accumulation.

EXPIRY is the termination of an insurance contract under the conditions and provisions of the insurance; that is to say, if the member has a term contract for 20 years, at the end of that period, the contract expires, therefore, its termination is by "expiry."

MATURITY is also the termination of a contract under its conditions and provisions; as, a contract promising a death benefit is said to mature when it becomes a claim by

death, or an endowment contract is said to mature at the end of the endowment period when the benefit is payable, whether payable in one sum or by instalments.

VALUATION. Since the first paper concerning valuation was read at Detroit, before the National Fraternal Congress, there has been much discussion of the question.

Some have construed the advocacy of valuation into a contention for such State supervision as would turn fraternal orders into "old line" companies.

When the question is properly understood this fear will be found to be almost entirely groundless.

A valuation is primarily a stock-taking, and its object is to give information as to the condition of the business. Only incidentally may it be regarded as a test of solvency.

In the business of life insurance the assets are of two characters—property and cash in actual possession, and promised receipts. The liabilities are promises to pay definite amounts upon the occurrence of certain events, or at the expiration of certain terms of years.

Valuation is the process of comparing the liabilities with the assets in order to find out whether they balance or whether there is an excess on one side or the other. As the future payments are due at various dates, the balancing process must be brought to some definite date, and the time at which the valuation is begun is usually chosen as the most desirable date.

Of course, if the valuation discloses the fact that the present value of the benefits promised is in excess of the present value of the contributions promised, the balance can be restored by the assets on hand in the form of cash, or other property with a cash value.

The balance can also be restored in two other ways; first, by increasing the value of the promised contributions, or by decreasing the value of the promised benefits.

Only in case the latter two remedies are inadmissible can valuation be regarded as a test of solvency.

That it is so regarded today in the case of "old line" companies is due to the fact that these companies are limited in the manner just described. On the side of benefits they have contracted to pay definite amounts, which they cannot diminish. On the side of contributions they have agreed to accept in full definite payments at definite periods, and these they cannot increase, either in size or frequency.

It is, consequently, essential that these companies should be able to show upon valuation that they have on hand the difference between the present value of benefits promised and the present value of contributions promised.

This difference is known as the net or legal reserve, when the net premium only is used in estimating the present value of promised contributions.

The fact that this difference, or reserve, has come to be used as a test of solvency for insurance companies has caused its importance to be unduly magnified, until the original object of valuations threatens to be lost sight of.

What the original object was understood to be in this country is indicated by the Massachusetts statute of 1852, quoted by President John A. McCall in his address before the State insurance officials, at Columbus, Ohio, September, 1902. The form prescribed by this act required two items to be stated, viz.: "Present value of existing policies," and "present value to the company of future premiums on these policies."

Not a word is here said about the reserve, as it was not then used as a test of solvency.

Similarly, in Great Britain the same method of valuation is used when Friendly Societies are in question.

The reason is not difficult to find.

Friendly Societies, on the other side, and fraternal orders on this side of the Atlantic are not confined within the rigid limits of "old line" companies, but enjoy a much more flexible premium system.

So far as benefits are concerned they are usually as little able as "old line" companies to diminish them, but their ability to increase assessments, either in number or frequency, is practically unlimited.

It is not necessary, therefore, for these societies to have on hand the entire difference between the promised benefits and promised contributions at existing rates.

A valuation of one of these societies is not a test of solvency, but rather an exploration.

Just as the navigator in coastal waters heaves the lead in order to determine whether or not there is any danger of a vessel's going aground, so the fraternalist institutes valuation of his society to see whether it needs to change its course in order to avoid the shoals.

If he finds as a result of such valuation that the assets in hand are insufficient to balance the difference between the present values of promised benefits and promised contributions, he then knows that it will be necessary to increase the latter, either in size or frequency, and can readily estimate the amount of increase required.

We find an excellent illustration of this method in a little pamphlet entitled, "Valuations of Fraternal Associations," by Frederick Gaston, President of the Grand Fraternity, in which he gives the items concerning a supposititious society. The present worth of future liabilities in this case is \$1,061,648.76. The present worth of the future payments, on the other hand, is \$1,017,033.01, the difference being \$44,615.75. Now, if this society had in hand \$40,000, being \$4,615.75 less than the required reserve, it would be insolvent by the legal reserve test, and yet by adding \$4,000 to the present value of the future payments, this technical insolvency could be immediately abolished. But \$4,000 is to \$1,000,000 as 1 is to 250. Therefore, an addition to the rates of one-two-hundred-and-fiftieth part would restore the balance between the value of future benefits and future contributions.

From this example it must be so evident that he who runs may read that it would be the height of absurdity to apply the legal reserve test of solvency to a fraternal order.

And yet it is just as evident that valuation is as important to a fraternal order as to an "old line" company.

The operation can be applied to any society, no matter what its plan.

The ordinary fraternal order endeavors, as a rule, not to exceed twelve assessments annually. Twelve, in fact, may be called the normal number, and twelve times the assessment rate may be considered as the normal annual payment.

If, then, in any such society, we place on one side the present value of all the insurance promised, and on the other side the present value of twelve assessments annually, we will obtain a difference which represents the amount that ought to be on hand to make the contract good if the present rates are to continue.

Or, we can determine from this same lack of balance what increase in the rates is necessary in order that their present value shall equal that of the benefits.

It has been repeated many times that at the inception of the contract the present value of the benefit secured under the same is from the very nature of the case exactly equal to the present value of the contributions expected to be received.

I have further explained that in the course of operation the present value of the benefit increases because of the nearer approach to maturity of the contract.

In other words, the benefit side of the insurance contract has an increasing value with the lapse of time and the duration of membership.

On the other hand, the payment side of the insurance contract has a decreasing value because the number of premiums, or annual or monthly contributions, still remaining to be paid diminishes with every payment, and, of course, the present value of the future contributions decreases with the continuance of the insurance contract and the lapse of time and duration of membership.

Obviously, with an increasing present value of the benefit and a decreasing present value of future contributions in the course of operation the present value of the benefits becomes greater than the present value of future expected contributions.

Under the explanation of the reserve I have stated that the net value of the insurance contract is represented by this reserve, and that the reserve represents the difference between the present value of the benefits and the present value of the future contributions at any given date after the issuance of the contract.

At the moment the contract is entered into the present value of the promised benefit is just equal to the present value of the future contributions.

Immediately after the first contribution is made, then there is a difference between the present value of the promised benefit and the present value of future contributions. The former increasing and the latter diminishing with the duration of the contract, there develops a net value to the insurance contract equal to the difference between the present value of the promised benefits and the present value of the remaining contributions to be received.

At the moment the insurance contract is made the company or society depends entirely upon the future contributions in order to provide for the benefits promised.

Immediately after the first contribution is made then the society depends upon the remaining contributions, together with the reserve accumulation, to provide for the benefits promised.

In other words, the reserve accumulation supplements the future contributions to enable the society or company to carry out its contract to pay benefit.

The valuation of promised benefits and future contributions is a forecast of the future on assumptions that future mortality will correspond with or be not higher than represented by the Mortality Table employed in the valuation, and that future interest earnings on investments will correspond with or be not lower than the interest rate assumed.

This kind of valuation is known as a "Prospective Valuation"—undertaking as it does to set forth *future prospects*.

In my opinion a Prospective Valuation is much more suitable for life insurance companies than for fraternal beneficiary societies, considering the present situation of the two kinds of organizations. At least, this character of valuation is not suitable for many societies and for a portion of the business of many others.

The contribution rates for the entire business of many societies are inadequate to provide for the promised benefits, when the latter are construed to fix the character of the contract. The same is true of large portions of the business of many other societies.

For example, in the certificate it is promised that a designated sum will be paid on proof of death of the member. In another certificate it is promised that a designated sum will be paid on the death of the member prior to age 70, or the principal sum will be paid in ten equal annual instalments, the first payment beginning at age 70.

The Benefit Side of the first certificate undoubtedly conforms to a whole life contract for death benefit payable whenever that event occur, and the present value of such a benefit is represented by

A_x = Single Premium, which would be employed in the Prospective Valuation.

The Benefit Side of the second certificate undoubtedly conforms in promises to a contract for an instalment endowment at age 70, or prior death benefit, and is represented by

$A_{E_x:70-x}$ = Single Premium, which would be employed in the Prospective Valuation of such a benefit.

When the future expected contributions, "as in practice actually collected," are valued by corresponding Single Premiums for whole life and temporary annuities, the resulting values, for very many societies, range from 30 per cent to 85 per cent of the values obtained for the promised benefits; while the accumulated funds will range from nothing to 10 per cent or 15 per cent of the value of promised benefits.

It is the exception when the present value of future expected contributions ("as in practice actually collected") plus the accumulated funds will equal the present value of promised benefits.

Consequently, under a Prospective Valuation the degree of solvency is shown as low as 30 per cent and seldom 100 per cent.

Complaint is immediately made of the injustice in such an exhibit, because by such the construction of the Payment Side of the contract it is not completely valued when assuming that the future contributions are represented by those "as in practice actually collected" at the date of valuation.

It is shown that the society has the reserved right to levy extra assessments, and that the legality of the exercise of this right has been sustained by court decisions whenever made an issue.

It is claimed that a present value should be given to the future contributions which may be collected under this reserved right.

It is argued that the right to levy extra assessments is not restricted, nor the number limited, and, therefore, the value of future extra assessments should equal the difference between the value of the promised benefits and the accumulated funds (if any) plus the present value of the future contributions on the basis of those "as in practice actually collected" at date of valuation.

This argument is supplemented by the statement that the members declare and assert their willingness to pay extra assessments when needed. This statement is supported by reference to the fact that members resist an increase in rates of contribution on the ground that their contracts were made upon a level rate basis, with a provision for the call of extra assessments when needed, and that they want to abide by the letter of their contracts.

It would be subversive of the fundamental principles of prospective valuation to assign a present money value to deferred contributions which might be collected under a latent right to demand future assessments.

If there were any present assurance that future extra payments would be made when demanded, their present value might be considered.

Ample experience can be produced to show that reliance cannot be placed in the payments of *extra assessments* as a substitute for *increased assessments*. The levy of extra assessments to supplement regular assessments has put many societies out of business, because of lack of response to the call.

The only practical use of the reserved right to levy extra assessments is to raise a fund to make good some impairment in the reserve, or to meet some emergency not contemplated in the computation of contribution rates that would be adequate under normal conditions. As hereinbefore explained the value of the reserved right to levy extra assessments cannot be greater than a required extra surplus or "buffer" fund under a "fixed" premium system of insurance.

Notwithstanding it is impractical, if not impossible, to assign a present money value of any degree to the reserved right to levy future extra assessments, nevertheless there is matter for serious consideration in the presentation concerning the unquestioned attitude of members in respect of increase in rates of assessment, and in regard to their declarations about a willingness to pay extra assessments "when needed."

A valuation exhibit that shows 30 per cent of solvency is an absurdity. One that shows 70 per cent of solvency discloses an impossible condition in so far as ultimate solvency is to be attained without increased rates or decreased benefits.

The publication of such exhibits brings valuation into disrepute and ridicule amongst the members of the societies.

They sneer at the idea of a society being one hundred and fifty millions of dollars deficient when it has fifteen millions in actual accumulated funds—or that there is a deficiency of \$20,000,000 when the society is possessed of \$2,000,000 invested in good securities.

There is so much ignorance in regard to the liability assumed in the promise to pay benefits at the death of members, that no general conception can be formed of the present money value of such promises. Logically, there can be no concrete idea of the present value of future contributions to meet future obligations.

The outcome is that only ridicule or indifference follows the presentation of an exhibit which shows a difference of millions of dollars between the present value of expected future claims and the present value of expected future contributions.

Absolutely nothing is accomplished by such a prospective valuation in way of educating the members or causing them to realize the technically insolvent position of their organization.

However much the officials may appreciate the valuation results, they are unable to stir the membership to reformative action by publication of the exhibit of deficiency.

It is of public knowledge that many unsuccessful efforts have been made to secure reforms and readjustments by the broadcast publication of valuation deficiencies.

It appears equally barren of practical accomplishment to make known valuation deficiencies under the sanction of law.

The aim should be to obtain practical results from valuation publicity.

Little appears to be accomplished by the publication of results from Prospective Valuations where large deficiencies are exhibited.

After years of study I have reached the conclusion that the best method is to make a Retrospective Valuation of certificates with rates not adequate for the benefits promised when construed from the Benefit Side of the contracts.

And there should follow the valuation exhibit requests for extra contributions from those who were shown to be creating deficiencies.

This method would test immediately the sincerity of the declared willingness to pay extra assessments when needed.

The Retrospective Valuation would clearly indicate the need of extra contributions and from whom they should be required.

Even though extra assessments were not levied until all accumulation was exhausted, nevertheless the retrospective valuation would disclose actual instead of expected conditions, and the members could see for themselves who were and who were not paying their share of the maturing claims, and could see who were creating deficiencies and thereby consuming the accumulated funds.

As an object lesson and for educational purposes nothing could be better than an exhibit of the results of a Retrospective Valuation.

It is a valuation which gives the results of past operation up to the date of valuation.

It shows to the members the accumulated value of all the past benefits which have been paid and the accumulated value of all past contributions, and whether or not the member's past contributions have been more or less than his share in the payment of claims—it shows whether or not he has paid more or less than the equitable cost for the protection granted to him.

RESERVE VALUES which are ordinarily published are the terminal reserves, and, as stated, these would be useful for making a valuation by policy years; that is, by taking the value at the end of the policy years. In practice, however, the valuations are made by the calendar years, and the modified terminal reserves are known as "mean" or "midyear" reserves.

When premiums or contributions are paid annually in advance the "mean" or "midyear" reserves ordinarily are obtained from the terminal reserves by taking one-half of the sum of the annual premiums and terminal reserves of the preceding and current years of valuation.

Thus for age 35 on a whole life policy or contract the premium is \$16.62 and the reserve at the end of the first year is \$11.20; adding these together and dividing by two we have the mean reserve in the first year of \$13.91.

The initial reserve for the second year is \$16.62 plus the reserve of \$11.20 at the end of the first year, or \$27.82.

The initial reserve of \$27.82 at the beginning of the second year plus the reserve at the end of the second year equals \$50.58, which divided by 2 gives \$25.29 as the mean reserve for the second year.

When the contribution is made annually in advance the mean or midyear reserve is greater than the terminal reserve. For example, the terminal reserve at the end of the first year is \$11.20, while the mean reserve is \$13.91. The terminal reserve at the end of the second year is \$22.76, while the mean reserve is \$25.29. This is due to the fact that the premium is paid in the beginning of the year, and is supposed to be diminished by the payment of claims during the year, so that at the end of the year a larger amount of the premiums and reserves would be used for the payment of claims.

The premium of \$16.62 in the beginning of the first year is called the initial reserve. Likewise the \$50.58 is the *initial* reserve at the beginning of the second year.

It is seen that the amount of the annual premiums plus the reserve at the end of the year is the initial reserve at the beginning of the following year. Therefore, we have the *initial* reserve, the *mean* reserve and the *terminal* reserve.

The terminal reserve is used in the valuation by policy years and is also used in the determination of the single premium for the purchase of paid-up insurance, extended insurance, loans or cash surrender value.

If premiums are paid monthly in advance on the first day of the month, the mean reserve would be found by taking one-half of the sum of the monthly contributions and terminal reserve of the preceding and current month, if we followed the method of obtaining the mean reserves when the premium is payable annually in advance.

However, in practice the premiums are due and payable on a fixed day in each month, and the better approximation of the mean reserve is obtained by taking one-half of the sum of the terminal reserves for the preceding and current years of valuation. In the words of the text-book:

"The value of the policy is the sum which the insurance society or company must have in hand to provide for that portion of the liabilities under the contract, which future premiums will not cover, and the only source from which it can be derived is

the accumulation of the balance of past premiums, not absorbed by the risks already incurred."

The valuation is the determination of the amount of the reserve accumulation required to supplement future contributions in order to enable the society or company to fulfill its promise.

The valuations may be made by employing the net reserve values; that is to say, the reserve values on the basis of \$1,000 may be worked out in advance, and be used for the valuation of any amount of protection by employing the reserve values for the age of entry and the duration as the multiplier for the amount of protection for the same age of entry and year of duration.

For example, the reserve accumulation at the end of the fifth year on a whole life certificate, the National Fraternal Congress Table of Mortality and 4 per cent interest on \$1,000 is \$59.62. Now, if at the end of the fifth year, we had \$100,000 of protection on members at age 35, we would multiply the \$100,000 by the \$59.62 (or rather we would multiply the \$59.62 by 100, because the \$59.62 is the amount of reserve at the end of the fifth year for entry age 35 on \$1,000 of whole life certificate). Consequently on \$100,000 we would have 100 times \$59.62, which would give us a reserve of \$5,962.

However, the \$59.62 is the terminal reserve; that is to say it is the amount accumulated at the end of the fifth policy year. If the valuation were made by the use of terminal reserve values, then the certificate or policy must be valued at the end of the certificate or policy year. This date might be in any month or any day of any month in the year. Contracts are issued throughout the month of each year, and consequently, in making a terminal reserve valuation the date of issue must be known in order to have the valuation to end on the anniversary of the issuance of the contract.

Such a valuation would be impractical, and therefore, the law permits and the practice is to make valuations as if contracts were issued at the middle of the year, because, on the average, policies or certificates have been issued all through the year and therefore have an average duration of six months.

At the end of the year—that is to say, on December 31 of any year—it is assumed that all of the policies or certificates outstanding at that date and issued during the current year have a duration of six months; and all policies issued in the previous year have a duration of one year and six months; and similarly for other years of issue. Therefore, to make a valuation on the basis of duration of one-half a year, one year and a half, two years and a half, etc., the terminal reserve values must be modified, as before indicated, by conversion into "mean" or "midyear" reserves.

If the valuation is made by single premiums and annuities these must be modified to give "mean" or "midyear" values.

Likewise if the valuation be on the "accumulation basis" there must be a modification of the accumulation factors to produce results, as of one half a year, one year and a half, etc.

SURPLUS is the excess of assets over liabilities.

ASSETS of a life insurance company consist of the available securities and other property and the present value of expected future contributions. The available property makes up the *actual* assets of the company or society. The expected future contributions receivable make up the *prospective* assets of the company or the society. The prospective assets are of the nature of bills receivable, being composed of the promised contributions expected to be received from the members. Only within the last two years have fraternal societies been compelled to report prospective assets;

that is, the present value of the future contributions expected to be received. Heretofore, they were only required to report the available or actual assets.

LIABILITIES of a life insurance company or society are the matured debts and claims of every character and the present value of the promised benefits. Assumed and matured debts and claims are called the *actual* liabilities, while the present value of the promised benefits are known as the *prospective* liabilities. The latter are of the nature of bills payable. The actual liabilities consist of claims reported, approved and unpaid, or existing, or in course of approval, and also the amount that is due to different parties whether for expenses or otherwise, and the net value of the outstanding certificates. This net value is known and heretofore explained as the reserve accumulation, or the required accumulation to maintain the integrity of the insurance contract. If the total actual and prospective assets are in excess of the actual net claims and reserve liabilities, the balance is called surplus, which is available for apportionment or distribution or appropriation, as may be determined by the management of the life insurance company or by the rules of the fraternal beneficiary society.

DIVIDENDS are the amounts distributed to policy-holders from the surplus or the amount paid to stockholders of stock companies from the surplus. Dividends to policy-holders of life companies are not always paid in cash, but are sometimes paid in the way of extended or paid-up insurance; usually in the way of paid-up insurance, and which latter, being purchased with the dividends, is added to the face of the policy, and has been called Reversionary Addition. Dividends to policy-holders are only paid upon *participating* policies or contracts. The contracts upon which no dividends are paid are called *non-participating* policies.

STOCK Companies are those which are controlled by stockholders who own the capital stock and in which policy-holders have no voice or vote.

MIXED Companies are those which have stockholders who jointly act with policy-holders to control the management of the companies.

MUTUAL Companies are those which are controlled by the policy-holders; at least, they have no stockholders and the policy-holders theoretically control the management.

RENEWAL PREMIUMS are the premiums or contributions made after the first payment.

PRESENT VALUE is the amount which a sum due at a future date would be worth now, at an agreed rate of interest.

ACTUAL MORTALITY is the death rate actually experienced by a company or society.

EXPECTED MORTALITY is the death rate according to some standard table of mortality.

ADVERSE SELECTION usually occurs in connection with unfavorable mortality, but generally it is the exercise of privileges and options by the members which are to the disadvantage of the society or company. In readjustments of contribution rates there are always large withdrawals, and when the withdrawals are of good lives, and the impaired lives remain, this is called adverse selection, since the company or society can not prevent the withdrawals of good lives nor the retention of the impaired lives. Adverse selection also results when members are taken on low rates of contribution to be increased or renewed at the end of a term or designated age at a higher rate. Many members on attaining to the age or to the end of the period for the low rate of contribution will not pay the higher rate and continue the protection, but will lapse. Usually these are good lives, while all impaired lives will continue the protection at the higher rate; therefore, there is an adverse selection against the society or company.

GROUP INSURANCE is thus described by Mr. Henry Moir :

"In 1911 bills were introduced in several State legislatures to authorize companies to accept groups of men for life insurance without medical examination, and to make it clear that this would not constitute an unjust discrimination. Such laws passed in one or two States and failed of passage in others. They facilitate and give legal sanction to plans for the assurance of working men by manufacturers and others who employ many men. When the plan is compulsory on the workmen, it is generally best that the employer should pay the premium or give what is nearly its equivalent, namely, an increased salary enough to meet the premium with the stipulation that the premium be deducted from the wages. When the plan is not compulsory on all, a medical examination is essential for the due protection of the company. New employes are usually subject to examination in any case. As an encouragement to thrift and an inducement to a contented spirit amongst workmen the plan is to be warmly commended. To make it completely satisfying it should be accompanied or supplemented by a pension fund providing for the old age of those workmen who survive. Several large groups have been accepted on yearly renewable term plans, thus furnishing protection without accumulating large reserve funds. Since the *average* age of a group of workmen remains approximately the same from year to year, the older men who die or drop out being replaced by young men, the total premiums to be paid by the employer would remain about the same. But if a business should begin to fall off, the average age of the men will tend to increase, meaning an increase of the premiums just at the time when the business is least able to meet this expense. Some firms and corporations prefer a plan of endowment insurance, maturing at an advanced age, as 60 or 65, and there is much to commend this form of policy for the purposes in view."

The group insurance plan of the life insurance companies has been opposed by the fraternal beneficiary societies, and at the meetings of the Associated Fraternities and the National Fraternal Congress in 1912, when the organizations were consolidated, there were resolutions passed condemning this kind of insurance, and the legislative committee of the Consolidated Congress was authorized to take such action as would prevent legislation favoring group insurance which might be to the disadvantage of the fraternal beneficiary societies. The opposition of the fraternal societies was aroused by the fact that one company, at least, undertook to insure as a group the lodges of a society in the State of Michigan. By this action a prejudice was raised against group insurance, and it was largely due to this opposition that the life insurance companies failed to secure favorable legislation in the States, with the exception of two or three, or possibly four, up to the date of this writing.

Under proper regulations and restrictions group insurance might be of great advantage of the workingman.

The trouble appears to be that proper supervision and regulation are not possible under existing conditions of disagreement.

Only a few companies (and no societies) are writing "Group" insurance, and these have different plans.

A very large number of the life companies and practically all of the fraternal societies oppose or do not care for this method of getting business.

Not exceeding half a dozen States (to March, 1914) have laws directly providing for group insurance, but the business can be done in upwards of thirty States by permission of Insurance Commissioners.

The Executive Committee of the National Fraternal Congress of America has adopted an unconditional resolution in opposition to group insurance and instructed

its Committee on Statutory Legislation to attempt the defeat of any bills which may be introduced in any of the States favorable to group insurance.

The position of unqualified opposition is taken mainly on the ground that to permit life companies to write group insurance would be to allow them to invade the field heretofore considered the exclusive pasture for fraternal societies.

The particular reason for opposition is the character of policies which are being written by the life companies, and the danger of "switching" entire lodges from the societies.

The Insurance Commissioners have declared themselves against the latter, and the companies proclaim that they have no intention of making any effort to "switch," or even solicit the wholesale transfer of local bodies. Nevertheless, the fraternal officials are firmly convinced that the opportunity would exist, and they fear to trust their "ancient enemy" with such power.

The question will finally be settled—as all questions of a public character are settled—upon the determination of public utility.

The people will not deny themselves of an advantage, because one corporation can and another can not give the service. Neither will the people forego a general benefit in order to protect the business of any public service corporation.

The present situation is not now affected by popular attention. It is a contest between corporations which favor and oppose a particular method of securing business.

What decision the people would render is problematical.

As heretofore stated, it appears that the public might be benefited by group insurance, under proper restrictions, regulations and supervision.

The objectionable feature under present methods is the elimination of the individual.

The employer and the life or casualty company come to an understanding and straightway announcement is made to the employes that a condition of their employment is that they be insured according to the scheme arranged for them. And that if they quit the service of the employer, or should he discharge, their insurance ceases.

This is a character of "beneficent" interference with individual rights and privileges not conducive to that sort of independence for which Americanism stands.

It is an utter impossibility to formulate one scheme of insurance for a group of persons and have the single plan best for each individual of the group.

It is a denial of unrestrained liberty when the individual is compelled by force of circumstances to accept something inferior to what he could obtain if left to his own selection.

There are objections to the present methods of writing group insurance, because of the misconception of its real character by those who are insured.

Again it is objectionable because of the opportunity given to the employer to unduly control the employes.

A case in point: A person has been employed at a wage of \$1,000 a year for ten years. He has a valuable interest in his insurance. He has an offer (because of his skill from ten years' experience) of \$1,200 a year. If he accepts the better position he loses his interest in the insurance. The present employer has an advantage gained from past contributions of his employe (in part at least) which is not to be commended.

The position of an employe should not be prejudiced by any scheme of group insurance, and he should be left free to accept or reject any plan offered.

If laws are enacted that will permit the writing of group insurance, all insurance organizations should be included. There should be no discrimination between companies and fraternal societies, as under the practice where the business is written by

permission of commissioners. And always the employe should be left free to accept or reject any group insurance scheme without prejudice to his employment, and he should be given an election as to the kind of policy for his insurance, and whether or not it terminated with his employment

ANNUITY is a stated sum of money which is to be paid yearly.

ANNUITANT is the one to whom the annuity is payable.

LIFE ANNUITY is one which terminates on the death of the annuitant.

PERPETUAL ANNUITY is one that is to be paid yearly or periodically for an unlimited number of years.

TEMPORARY ANNUITY is one which terminates after a specified number of years.

CONTINGENT ANNUITY is one that terminates on the happening of some stated future event, as at the death of a designated person, or at the end of a number of years after the end of a designated period. The event may be one that must occur, or one that may never occur, so that it is possible for a contingent annuity to be perpetual.

DEFERRED ANNUITY is one the yearly payments of which do not commence until some future date, or the happening of some future event.

JOINT ANNUITY is one to be paid so long as both or all of two or more lives continue to exist.

ANNUITY ON THE LAST SURVIVOR is an annuity to be paid so long as either or any one of two or more lives shall continue to exist.

SURVIVORSHIP ANNUITY is to be paid to a person termed the nominee, provided he survives a designated person who is termed the insured.

AMORTIZATION OF BONDS. In a number of States the laws provide for a valuation of securities by the method known as Amortization. The law of New York State reads as follows:

"All bonds or other evidences of debt held by a life insurance corporation, authorized to do business in this State, shall, if amply secured and if not in default as to principle and interest, be valued as follows: If purchased at par, at the par value; if purchased above, or below par, on the basis of the purchase price, adjusted so as to bring the value to par at maturity, and so as to yield in the meantime the effective rate of interest at which the purchase was made, provided that the purchase price shall in no case be taken at a higher figure than the actual market value at the time of purchase, and provided further that the Superintendent of Insurance shall have full discretion in determining the method of calculating values according to the foregoing rules, and the values found by him in accordance with such method shall be final and binding; provided also that any such corporation shall return such bond or other evidences of debt at their market value or their book value, but in no event at an aggregate value exceeding the aggregate of the values calculated according to the foregoing rule. The Superintendent of Insurance may at any time, in his discretion, require any insurance corporation, other than a life insurance corporation, authorized to do business in this State, to value its bonds or other evidences of debt in accordance with the foregoing rule."

In commenting upon this law, Mr. Moir said:

"It should be noted that this method of valuation does not apply to debts which are not amply secured, nor to bonds which may be in default as to principle or interest. It means generally that securities may be valued on the original basis on which

they were bought, and if a bond were purchased so as to yield $4\frac{1}{2}$ per cent interest, then it may be taken throughout its entire duration as yielding this interest, whether the rate of interest should move upwards or downwards. For a life insurance company whose obligations extend for 50 or 60 years, the system is to be highly commended."

LEGAL RESERVE. Many persons confuse legal reserve with mathematical reserve. The error is due to the fact that in almost all of the States life insurance companies are required to maintain a reserve accumulation according to some standard mortality table. From the fact that this reserve is required by law, it got its name of "Legal Reserve," and Life Insurance Companies became known as "Legal Reserve Companies." The laws which require reserve accumulation are called valuation laws from the fact that the legal reserve, or the reserve accumulation, can be determined only by a valuation, and since the laws require that the net value of the certificates or policies should be reported, they are known as net valuation laws. The laws recently enacted for the valuation of the certificates of fraternal beneficiary societies do not confine the value to the net reserve, but the Societies are permitted to report the present value of the promised benefits and the present value of the future contributions as in practice actually collected. In more recent enactments it is also provided that the Societies may value their certificates on what has been designated "accumulation basis." This is a retrospective method of valuation, since it accumulates the claims which have been paid and accumulates contributions which have been made; the difference between the two being the value of the accumulated surplus or deficiencies. In the case of fraternal societies which have had inadequate rates of contribution, some of the values are negative. This will be explained in more detail in describing valuations.

MORTALITY RATES. There is no reason why the mortality rate in a fraternity should be either higher or lower than in an "old line" company, unless the one takes poorer risks than the other does.—Kansas Workman.

While the above statement is correct in intention, it is unfortunately put. There are other reasons, and one or two of them are of considerable importance.

In the first place, there is no qualification made as to the age distribution of the members, and yet this affects, more than any other one circumstance, perhaps, the death rate of an insurance society. This age distribution will not be the same in a fraternal order as it is in an "old line" company, even though they have been admitting members between the same age limits, for the same length of time, because of the different kind of policies issued. The ordinary fraternal order deals principally in straight life insurance, and the certificates have little or no cash value at any time. The "old line" company, on the contrary, makes a much more prominent feature of the investment side of insurance, and its policies have a constantly increasing cash value. The result of this difference is that the old members remain in the fraternal order, while a large proportion of them withdraw from the "old line" company, so that in the course of years the age distribution becomes very different in the two, and the fraternal order will consequently show a much higher death rate than the "old line" company.

Another important fact in this connection is that every investigation that has been made of mortality experience shows that at similar ages the death rate on limited payment policies, whether endowment or whole life, is much lower than on ordinary life policies, and that the latter is lower than that on term policies. The fraternal order usually issues neither endowment nor limited payment life policies, and a great many of its usual certificates are really taken on a temporary basis. It is but natural in these circumstances that the fraternal order should have a higher

death rate than an "old line" company, even when the age distribution in the two is the same.

There are other minor reasons for difference, but the two given are sufficient to show that the statement quoted from the *Kansas Workman* is decidedly misleading if unqualified. The reason for offering this criticism is that misinformation on this subject is so widespread and so injurious on account of the false conclusions to which it leads that no effort should be spared to disseminate the truth.

PENSIONS. As a solution of the problem of superannuation in the government service the United States Civil Service Commission has recommended the compulsory purchase of deferred annuities, payable at age 70, or upon the occurrence of prior disability. It is believed by the Commissioners that this system will be more equitable than that of pensions, as the element of "pull" enters so largely into the latter.

While this opinion of the Commissioners is probably correct, the question may well be asked, why should government employes be pensioned? They are a peculiarly favored set, with short hours and long vacations, and it is difficult to understand why the mere fact that they are serving the government should entitle them to continued pay after they cease such service unless the employes of private corporations should be equally favored. A pension is properly payable either for extraordinary services or for premature disability incurred in the line of duty. Thus soldiers or sailors who have been wounded or otherwise injured as a result of the hazardous service that they perform are rightly entitled to be pensioned, but a service pension, even for these, is wrong in principle. Similar remarks apply to the fire and police force of municipalities.

That the employes of the government ought to provide for their old age no one will deny. The only question is as to whether or not this provision should be compulsory. It seems to me that in making their recommendation the Commissioners have considered immediate effects only, and have overlooked the secondary effects, which, as has been so well pointed out by Herbert Spencer, are frequently of far more importance. The independence of character of which we boast so much in this country is undoubtedly the product of our free institutions, and any steps in the direction of paternalism should be taken with the utmost hesitation, and only after their necessity has been conclusively demonstrated. We all desire that other people should be good, but most intelligent men have come to the conclusion that they cannot be made good by law—that it must be entirely by self-development. Similarly, the advantages of thrift are abundantly evident; but this quality also must be of individual growth. It has comparatively little value when forced by legislation. Furthermore, a measure such as that proposed by the Civil Service Commissioners would tend to retain government servants in their positions in spite of their lack of merit.

There are numerous minor objections that might be raised to this recommendation, but enough has been said to show that it should not be endorsed without careful examination and consideration of all its possible results.

Some States and many cities have pension funds, most of them being largely maintained and dominated by those who expect to become beneficiaries under the system.

Railroad and other corporations subscribe to pension funds for employes and in some instances control the management of the funds and prescribe the relief to be granted.

There are pension funds maintained by cooperative associations of teachers and policemen and firemen, etc.

I have investigated many of these funds and there can be urged against them the objections to pensioning public servants, or they are subject to the criticism of contributions inadequate for the benefits promised, even in respect of the teachers' funds.

STRENGTH OF FRATERNITY. There is an inherent strength in fraternity where there exists real fraternity. A Mason will do much and sacrifice much for a brother Mason. It is the same with a Woodman, a Workman, a Maccabee, an Arcanumite, a Forester, and members of many other real and truly fraternal orders which have that bond of brotherly love which really binds.

The fraternity of such societies is an element of strength which counts for dollars, and can be relied upon with the same degree of faith as can the contract promises to pay premiums by policy-holders of business life companies.

There is a disposition to "pooh-pooh" this element of strength when writing about the millions of promised benefits assumed by the fraternal beneficiary societies.

There are eighty-seven fraternal beneficiary societies which can depend upon the spirit of fraternity to materially aid them in placing these organizations on a permanent and sound basis. There are others which can depend upon the fraternity of their associations to equal so much money, but the amount would be difficult to state in dollars and cents. There are some which have given too much attention to the business side and too little to the fraternal side and must place no reliance in fraternity to help them out of difficulties.

All fraternal orders which preach and practice fraternity have a strength wholly unknown to business organizations.

If officials will only be frank and candid and thoroughly confidential and honest with their members, telling them plainly and truthfully of present or prospective difficulties, they can be assured of support in any practical remedy to overcome such difficulties.

There will be certain members, for individual and personal reasons, who will make a great noise, and often make it appear that the members will turn out and turn their backs upon the honest officials, but no instance of such a thing can be recalled.

Honest officials of the true fraternal orders can depend upon the discrimination and justice, as well as the strength, of real fraternity.

Demagogues and self-seeking persons will endeavor to make the members believe that the executive officers are doing a wrong thing in telling the truth and in offering a remedy for universally acknowledged errors and defects.

These kind of people always have a big mouth and a loud voice, and they have been going about making quite a noise, but the members will not be fooled.

Fraternity is a thing to be conjured with, if it be real. The counterfeit won't do. The *name* "Fraternal" is not sufficient.

Indeed, the greatest strength of fraternity has a breaking point.

Nearly every one of the eighty-seven, now in mind, is placing a greater and greater strain upon its bonds of brotherhood, which is something that must stop, otherwise they must be soon placed in the doubtful class.

Don't strain and abuse fraternity. Encourage and use it for the betterment of man and the protection of women and children.

ADEQUATE RATES. Certainly no one will accuse the author of this book of opposing the adoption of adequate rates by fraternal orders. He has been too urgent in advocacy of them for his position to be misunderstood.

However, the mere adoption of a plan of adequate rates of assessment will not assure present or future solvency.

The proceeds from the assessments must be properly applied if the rates of assessment are to maintain a successful management.

Rates may be "adequate" in so far as computations are concerned, but if the proceeds are dissipated in wasteful operation, careful calculation goes for naught.

The officials of fraternal orders, in some instances at least, are following the "old line" example set for them nearly half a century ago.

Actuaries computed tables of "adequate rates" for the old line companies, and the same were adopted and put into force, and the companies advertised the fact and thereby gained the confidence of the public.

Straightway, officials of many of the life companies diverted funds from the uses intended by the actuaries, and it followed that primarily adequate premiums were inadequate to support abuse and extravagance.

The result was failure.

This result was hurried, in many cases, by examination and valuation.

The result of diverting funds by fraternal officials will ultimately be failure.

That result will be no less disappointing and disastrous because of ignorance in the uses of funds by these fraternal officials.

It will not alter the situation even though the funds are used in "building up" the society.

A good plan and adequate rates will not make a successful life insurance organization.

Wise and economical management will do more with a poor plan and inadequate rates than wasteful and extravagant management will do with a perfect plan and adequate rates.

Without regulation, supervision and valuation, there is possible great danger of the public being deceived, and may be defrauded, by officials adopting "adequate rates" and securing endorsement by actuaries of their sufficiency, and then destroying the effect of such endorsement by improper management.

In calculating or certifying to adequate rates, the actuary or mathematician must always assume proper management, and the use of funds according to the assumptions of the computations.

If there is no restraint or regulation to prevent or correct poor or improper management the adequacy of rates and endorsement of an expert cannot keep the organization from failure.

COMPETING FOR ADEQUACY. No better evidence could be given of the change in public sentiment than the pride with which officials of fraternal orders announce a revision of assessment rates.

We predict that the shibboleth of "Cheapness," which was the dependence of deputies and organizers for so many years, will soon be relegated to the things which have been.

It is significant that the more recently organized societies have been most active in the effort to provide adequate rates.

They are wise in this, because the longer the operation on wrong lines, the more difficult it becomes to get upon a sound basis.

This truth was recently strikingly demonstrated by actual application of a certain schedule of rates to three different societies; one of them had just organized and the rates could be applied to all of its members; the second had been operating for twenty years, but 85 per cent of its members were within admission ages and to whom the rates could be applied; the third had been operating about twenty

years, but a very large percentage of members was above the admission ages and the rates were inadequate for these at their attained ages.

The schedule was an exceedingly attractive one for the new society.

For the second society the schedule was equally attractive for the members within admission ages; but, when the rates were advanced proportionately to attained ages of the older members, they became so exorbitant as to arouse protest and antagonism from these members. To avoid such a condition, it was necessary to "load" a part of this burden upon the younger members, which "loading" necessarily increased the rates at the lower ages and made the schedule less attractive.

While the third society did not have members at more advanced ages, it had a larger proportion of its membership at these ages. While the relief, per each \$1,000 of protection, for the old members was the same, age for age, as in the second society, the aggregate amount "loaded" onto the younger members made much higher rates at the lower ages in the third society, and hence rendered the schedule less attractive when applied to that society.

In the first society the member, at say, 20 years of age was only required to pay a rate necessary to cover the cost of his own protection. The same was true, of course, for all other members at their respective ages.

In the second society, the member at age 20 (as well as members at other admission ages) would be required to pay a rate to provide for his own protection, and, in addition, an extra rate for the purpose of assisting older members.

In the third society a still higher extra rate must be paid by the younger for the benefit of the older members, because of the large number of the latter in proportion to the former.

Represented by its present value in cash, the "load" placed upon the member at age 20, by the second society, was \$35 per \$1,000 of insurance. This meant an extra rate of about 60 cents annually.

The present value of the "load" laid upon the member at age 20, by the third society, was \$53 per \$1,000 of protection, which meant a yearly extra rate of 90 cents.

Suppose the annual rate, at age 20, without any "loading" for old members was, say \$9.00, then that would be the rate for the member of age 20 in the first society. For a member of the same age in the second society the rate would be \$9.60, and in the third \$9.90.

The second and third, as compared with the first society, would be at a disadvantage of 60 and 90 cents, respectively, because they would only offer \$1,000 of protection for \$9.60 and \$9.90, which could be had on as safe a plan in the first society for \$9.00.

The above demonstrates three things, namely:

First, a society should start right.

Second, if the start is wrong, the society should get right as quickly as possible.

Third, that rates which are adequate when applied to one society may be inadequate when applied to some other society.

ADEQUACY, PERMANENCY, ATTRACTIVENESS. These are the three requisites for a practical and successful schedule of assessment rates.

The rates may be "Adequate" for a temporary society, and they may be very "Attractive" because "cheap," which is always possible for temporary protection. But such rates might not assure "Permanency."

Rates may be "Adequate" and may be such as to guarantee "Permanency," and yet may not be "Attractive."

So, also, rates may be "Attractive," but wholly "Inadequate" to provide for promised benefits or to assure "Permanency."

Unless there is obtained a combination of "Adequacy," "Permanency" and "Attractiveness," there can be no successful business operation.

"Adequacy" of rates may guarantee "Permanency," but if not "Attractive," the society adopting them will fail for lack of public patronage.

There may be "Attractiveness," but if the rates are not "Adequate" and give assurance of "Permanency," then the society adopting them will fail because unable to fulfill its promises.

To successfully work the combination of "Adequacy," "Permanency" and "Attractiveness" requires the joining together of expert knowledge in the preparation of rates and practical knowledge in applying them to existing conditions.

NECESSARY COMBINATION. There is no royal road to good and successful management of any sort of a life insurance organization.

There are no simple rules to be laid down for attaining to a perfect system in business methods.

In the words of Josiah Quincy: "Neither a good system nor good men can be sufficient alone. They must be combined. An ideal organization can be perverted by bad men, and the efforts of good men can be rendered nugatory by defective systems."

There have been failures amongst "old line" companies, not because of defects in the system of insurance, but because of mismanagement by incompetent or dishonest men.

There have been failures amongst fraternal orders, not because the officers and managers were incompetent or dishonest, but because of a defective system.

For successful and permanent operation there must be a combination of good men and a perfect system.

Adequate rates and a scientific plan are of no avail when the business management is controlled by selfish, designing, incompetent, unscrupulous or dishonest men.

The fact of a scientific plan and adequate rates may become a cloak to hide the misdeeds or mistakes of such men.

The plan and the rates are emblazoned in shining letters to dazzle the eye, to the end that ruinous management may not be noticed until too late for remedy.

On the other hand, the results of adding new members, of economical management, of popular social features, may so attract attention as to cause members, and even officials, to neglect to look into the system under which the business is being operated.

Present promises may be made for the future payments of millions and millions in benefits, without any consideration whatever of the means for the fulfillment of these promises.

Because thousands of persons can be persuaded to accept certificates as evidences of the promises to pay future benefits, and in consideration therefor will make monthly contributions of small amounts, these facts appear conclusive as to the efficiency of management and the prosperity of the society.

The relation between the contributions and the promises are utterly ignored.

In a general way it is realized that the promises can only be fulfilled by having contributions adequate for the payment of all claims under these promises.

But how many members, how many directors and trustees and officials stop to question and analyze and investigate the system and plan of operation? How many of these can give a plain and satisfactory and correct answer to the question:

"Will the promised contributions be adequate and sufficient to provide for the promised benefits?"

Permanent life insurance organizations cannot be builded by good men and good managers alone.

There must be a combination of good men and good plans.

Look to it that your society has both, else ultimate failure will result.

LEGISLATION. The importance of thrift, both to the individual and to the community, has been so often told in song and story that a rehearsal of the tale would be wearisome and profitless. Charity is a beautiful virtue when the necessity for it exists, but few intelligent persons will deny that alms-houses and dispensaries are blots on our fair landscape, only less hideous than jails and penitentiaries. The abolition of poverty may be an "iridescent dream," but surely the eye of hope is not forbidden to view a time when every adult male shall be able and willing to support himself and his natural dependants. Verily, it is a consummation devoutly to be wished, and to the accomplishment of no better end can we devote our surplus energies.

In this connection precept is not lacking. Advice, proverbial and otherwise, so prominently adorns the pages of both permanent and ephemeral literature and is thundered from so many platforms and pulpits that he who would escape the all-pervading admonitions must seek a rock in the mighty waste or some "boundless contiguity of shade," "far from the madding crowd."

It is the incompetent that need to learn the lesson of thrift, and it is of the utmost importance to society that they should be encouraged therein.

Unable properly to protect themselves, they should receive the more consideration at the hands of the law.

To those that clear their minds of cant and reason from facts instead of formulas, the necessity of a certain admixture of paternalism with government is apparent.

Men with the ability to acquire wealth may safely be left to take care of it in their own way.

Not so the poor, however. Their money is hard earned and still more hard saved, and the loss of their little surplus is not only a misfortune to them, but indirectly to the whole community, in that it discourages the developing habit of providence.

For these reasons, if for no others, peculiar safeguards should be applied to the business of any financial institution that caters specially to the poor.

This duty of the government has been recognized in the case of savings banks, and, as a result, the loss of deposits made therein is exceedingly rare.

Of perhaps equal importance with the savings banks are the great fraternal beneficiary associations, the so-called poor man's insurance societies.

For some reason not easy to understand, but probably owing to the influence of general apathy, the government has grossly neglected its duty toward these orders.

Perhaps because of their democratic management they have been largely free from restraint.

In most cases failure of the society has caused little or no financial loss to the members because collections were made for the purpose of paying current claims only, and there was no accumulated fund belonging to the aggregate membership.

The damage resulting from failures has been largely indirect, but none the less real.

Many members, alike ignorant of insurance principles and of the *modus operandi* of their own societies, supposed that they were paying for whole life protection.

Upon discovery of their error they were not unnaturally disposed to blame everything else rather than their own lack of information.

Embittered by disappointment, they denounce the whole fraternal system as a fraud and often abandon the attempt to protect their families in this way.

Thus what should be a blessing becomes a curse, in that it discourages rather than stimulates the disposition toward thrift.

Such an attitude on the part of the poorer classes is most unfortunate and demands the serious consideration of everyone interested in the welfare of humanity.

If a remedy can be found that will restore and justify the confidence once placed in these societies, it cannot be applied too quickly.

Within recent years reserve funds have become increasingly prominent in the plans of the various orders so that failures will be more disastrous in the future than they have been in the past. To prevent these failures, which are inevitable under present loose methods of regulation, is one of the most urgent duties of the times.

As fraternal beneficiary associations are chartered by the various States, and thus receive official endorsement of their plans, the duty of the State to test such plans before issuing the charters is clear.

This duty is rendered more imperative by the fact that the average citizen is utterly incapable of doing the work himself.

Life insurance contracts cover long periods and are based on assumptions as to mortality and interest that place them beyond the comprehension of all who are not somewhat instructed in the technicalities of the subject.

The average man buys protection to his family as he buys medical or legal advice, largely on faith. He cannot test the quality of his purchase except by results.

In the latter two cases these results are more or less immediate; in the former they are remote.

Yet the State properly requires the aspirant for medical or legal practice to demonstrate his competency before it allows him to solicit the public.

Still more rigid should the requirement be in the case of a life insurance organization, which expects, on the average, to receive money for many years before it makes any direct return.

The plan of such an institution needs to be adequate not only for the present, but for a long time to come.

By failing to subject these plans to proper tests before permitting their operation, the State neglects one of its most important duties.

It is true that old line companies are held to a pretty strict accountability where net reserve laws are in force; but the fraternal order, which caters particularly to poor men, to whom the loss of their protection is of the most serious consequence, in respect of reserves, is practically unrestrained. The recently enacted valuation laws for fraternal societies is a step in the right direction—and probably is a sufficiently progressive step until 1921, when their effect can be determined and their defects cured.

INSURANCE METHODS. "Principles" are often confused with "methods" in respect of rates of assessment for insurance cost.

There is in reality but one primary principle underlying the business of life insurance.

There are many ways or methods of applying that principle to practical operation.

One way, and the first method which was adopted in practice, is to make a level rate for all contributing members, regardless of age, occupation, health or residence, and levy assessments according to that rate to provide for claims as they occur.

This method may be modified by confining the insurance to one class, as in Brooklyn, N. Y., where there is a society which insures doctors only.

Or the modification may be in excluding certain hazardous occupations, or persons in bad physical condition, etc.

Another method is to grade the rates to ages of entry and have them remain level thereafter and increase the number of assessments to provide for increased cost.

Again the method may be to grade to ages of entry and have the rates remain level thereafter, and provide for the future increase in cost by adding to the rates an excess charge over actual cost for a number of years so as to produce an accumulation to take care of the heavier cost in later years. This is called the "Level Premium" method.

And then there is a method of grading rates to ages of entry and have them increase annually or periodically thereafter to cover the increasing cost. This is the "Natural Premium" or "Term" method.

There are other different methods of providing for the payment of the cost of insurance protection, and there are many modifications and combinations of all of the methods.

The object of all of them is to pay claims under the agreements and contracts of insurance.

Some one very pertinently wants to know why a man should not exercise the privilege of selecting either method that suits his fancy.

Why should Insurance Commissioners, or legislators, undertake to prevent societies or associations from offering protection under any one of these methods?

There should be no abridgment of the right of the individual to select the method of payment most to his liking. The very fact that he elects to choose between methods is evidence of discrimination and judgment, and every man should be left to his own judgment in such purely personal matters.

It is not so easy to answer the question when it relates to open and unrestricted license to societies and associations.

If they would tell the whole truth about their methods and leave the applicant to intelligently select, then unrestrained operation would be advisable.

However, it is well known that individuals are *persuaded* to take insurance protection. Very few voluntarily seek it. Very few use any judgment in deciding between methods. Almost invariably they accept what they take on faith and believe what is told them as to plans and methods.

In such circumstances, would it not be well to require organizations to fairly represent what they have to offer?

Would it not be to the advantage of those who voluntarily tell the whole truth to have some law to force all to be truthful?

If one society has the old equal levy plan, and believes it good, why should it object to being advertised as operating upon such a method? And so with all others having different methods.

Why should not each tub stand upon its own bottom?

Why not have each society state its method in plain terms and then succeed or fail upon the merits of it?

Why not have insurance principle the foundation stone for practical operation?

THE NATURAL PREMIUM PLAN. The following exhibit is worth study from many angles.

Take columns 2 and 3. Column 2 shows the "natural premiums," the "annually increasing costs of insurance." Column 3 shows the sum that an entrant at 20 will pay towards claims on account of death amongst his associate insurants, amounting to \$8,009.80 if he lives to age 98, and, under the pure natural premium plan, he would be assessed \$1,000 to pay his death claim should he die at that age as expected of him.

Then note the last item of column 5, showing \$7,967.58 as the total of "mortality increment" in comparison with \$1,242.22 as the "interest increment" under the net level annual premium of \$10.34.

Following is an analysis and demonstration of the workings of the two plans from age 20 to the limit of the N. F. C. Table at age 99, under an assumption of 4 per cent interest:

Column 0 gives the number of years from ages 20 to 98, inclusive.

Column 1 gives the level annual premium at age 20 for insuring \$1,000 in the event of death.

Column 2 gives the natural annual premiums, or yearly increasing insurance costs of \$1,000 payable at death, beginning with \$5.00 at age 20, and increasing yearly to \$1,000 at age 98, for the seventy-ninth and last year of insurance.

Column 3 gives the summation of the natural premiums (in column 2), and shows the total amount (\$9,009.80) that would be paid by a member who entered at age 20 and survived to age 99 (the limit of life as assumed in the Mortality Table).

Column 4 gives the amounts, with 4 per cent interest, taken each year from the level premium and placed in reserve to the end of the twenty-ninth year. Beginning with the thirtieth year the insurance cost (see column 2) exceeds the level premium (and interest thereon) by 7 cents, which latter amount is drawn from the accumulated reserve from the member's premiums (shown in column 5). The difference between the cost and the level premium in succeeding years is drawn from the reserve accumulated by the member until that fund is exhausted in the fifty-fifth year. Beginning with the fifty-fifth year the difference between the yearly increasing costs and the level premium is drawn from "Mortality Accretions," being the accumulated amount of reserve payments (with interest) that have been forfeited by those who have died.

Column 5 gives the summation of the amounts (with interest) which have been placed in the reserve from the level premium payments. There are additions from the level premiums and interest for twenty-nine years. The additions are only from interest after the twenty-ninth year, since the entire level premium is consumed for insurance cost in succeeding years. The costs of insurance increase so rapidly in these succeeding years that they also consume the entire individual reserve accumulation before the end of the fifty-fifth year. Beginning with the latter year, the member's interest in the accumulation from reserve payments forfeited by those who have previously died is made available to meet the increasing demands for insurance cost (as given in column 2). The summation of the amounts thus drawn from "Mortality Accretions," shown in this column (5) from the fifty-fifth to the seventy-ninth year, discloses the fact that the member is benefited thereby to the amount of \$7,967.58. It has required all of his payments with interest (under the level premium, see \$1,242.22 in column 6), and \$7,967.58 forfeited by deceased members, to pay the costs of his \$1,000 of protection during seventy-nine years.

Column 6 gives the sum of columns 3 and 5, and shows the total amounts, with interest, paid by the member under the level premium plan of contributing the yearly and uniform amount of \$10.34. Beginning with the fifty-fifth year, the sum of columns 3 and 5 is, in reality, a difference, because the amounts in the latter column are minus quantities, being derived from the accumulation of others and not from the payments by the individual member. The annual increase in column 6, after the fifty-fifth year, is, therefore, only the amount of the level premium (\$10.34) with interest, or \$10.75.

(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	10.34	5.00	5.00	5.75	5.75	10.75
2	10.34	5.04	10.04	5.71	11.69	21.73
3	10.34	5.07	15.11	5.68	17.84	32.95
4	10.34	5.11	20.22	5.64	24.19	44.41
5	10.34	5.15	25.37	5.60	30.76	56.13
6	10.34	5.20	30.57	5.55	37.54	68.11
7	10.34	5.26	35.83	5.49	44.53	80.36
8	10.34	5.32	41.15	5.43	51.74	92.89
9	10.34	5.39	46.54	5.36	59.17	105.71
10	10.34	-5.47	52.01	5.28	66.82	118.83
11	10.34	5.55	57.56	5.20	74.69	132.25
12	10.34	5.65	63.21	5.10	82.78	145.99
13	10.34	5.75	68.96	5.00	91.09	160.05
14	10.34	5.87	74.83	4.88	99.61	174.44
15	10.34	6.00	80.83	4.75	108.34	189.17
16	10.34	6.15	86.98	4.60	117.27	204.25
17	10.34	6.31	93.29	4.44	126.40	219.69
18	10.34	6.49	99.78	4.26	135.72	235.50
19	10.34	6.70	106.48	4.05	145.20	251.68
20	10.34	6.92	113.40	3.83	154.84	268.24
21	10.34	7.17	120.57	3.58	164.61	285.18
22	10.34	7.45	128.02	3.30	174.49	302.51
23	10.34	7.77	135.79	2.98	184.45	320.24
24	10.34	8.11	143.90	2.64	194.47	338.37
25	10.34	8.48	152.38	2.27	204.52	356.90
26	10.34	8.87	161.25	1.88	214.58	375.83
27	10.34	9.29	170.54	1.46	224.62	395.16
28	10.34	9.75	180.29	1.00	234.60	414.89
29	10.34	10.27	190.56	.48	244.46	435.02
30	10.34	10.82	201.38	-.07	254.17	455.55
31	10.34	11.44	212.82	-.69	263.65	476.47
32	10.34	12.15	224.97	-1.40	272.80	497.77
33	10.34	12.90	237.87	-2.15	281.56	519.43
34	10.34	13.75	251.62	-3.00	289.82	541.48
35	10.34	14.68	266.30	-3.93	297.48	563.78
36	10.34	15.71	282.01	-4.96	304.42	586.43
37	10.34	16.86	298.87	-6.11	310.49	609.36
38	10.34	18.12	316.99	-7.37	315.54	632.53
39	10.34	19.50	336.49	-8.75	319.41	655.90
40	10.34	21.05	357.54	-10.30	321.89	679.43
41	10.34	22.75	380.29	-12.00	322.77	703.06
42	10.34	24.64	404.93	-13.89	321.79	726.72
43	10.34	26.72	431.65	-15.97	318.69	750.34
44	10.34	29.03	460.68	-18.28	313.16	773.84
45	10.34	31.57	492.25	-20.82	304.87	797.12
46	10.34	34.39	526.64	-23.64	293.42	820.06
47	10.34	37.52	564.16	-26.77	278.39	842.55
48	10.34	40.96	605.12	-30.21	259.32	864.44
49	10.34	44.77	649.89	-34.02	235.67	885.56
50	10.34	48.98	698.87	-38.23	206.87	905.74

(0)	(1)	(2)	(3)	(4)	(5)	(6)
51	10.34	53.65	752.52	-42.90	172.24	924.76
52	10.34	58.81	811.33	-48.06	131.07	942.40
53	10.34	64.49	875.82	-53.74	82.57	958.39
54	10.34	70.81	946.63	-60.06	25.81	972.44
55	10.34	77.78	1024.41	-67.03	-40.19	984.22
56	10.34	85.48	1109.89	-74.73	-114.92	994.97
57	10.34	93.99	1203.88	-83.24	-198.16	1005.72
58	10.34	103.40	1307.28	-92.65	-290.81	1016.47
59	10.34	113.84	1421.12	-103.09	-393.90	1027.22
60	10.34	125.35	1546.47	-114.60	-508.50	1037.97
61	10.34	138.09	1684.45	-127.34	-635.84	1048.72
62	10.34	152.19	1836.75	-141.44	-777.28	1059.47
63	10.34	167.77	2004.52	-157.02	-934.30	1070.22
64	10.34	184.96	2189.48	-174.21	-1108.51	1080.97
65	10.34	204.04	2393.52	-193.29	-1301.80	1091.72
66	10.34	225.08	2618.60	-214.33	-1516.13	1102.47
67	10.34	248.35	2866.95	-237.60	-1753.73	1113.22
68	10.34	274.15	3141.10	-263.40	-2017.13	1123.97
69	10.34	302.57	3443.67	-291.82	-2308.95	1134.72
70	10.34	334.18	3777.85	-323.43	-2632.38	1145.47
71	10.34	368.79	4146.64	-358.04	-2990.42	1156.22
72	10.34	407.67	4554.31	-396.92	-3387.34	1166.97
73	10.34	449.75	5004.06	-439.00	-3826.34	1177.72
74	10.34	498.45	5502.51	-487.70	-4314.04	1188.47
75	10.34	549.38	6051.89	-538.63	-4852.67	1199.22
76	10.34	602.74	6654.63	-591.99	-5444.66	1209.97
77	10.34	655.17	7309.80	-644.42	-6089.08	1220.72
78	10.34	700.00	8009.80	-689.25	-6978.33	1231.47
79	10.34	1000.00	9009.80	-989.25	-7967.58	1242.22

If the foregoing table is carefully studied, a clear understanding should be had of the difference between the level and natural premiums. And there should also be a definite appreciation of the advantages of the two plans.

It will be seen, from comparing columns 3 and 6, that the member entering at 20 does not pay out a total sum under the "Natural Premium" equal to the sum paid under the "Level Premium" until the end of fifty-four years, or at age 74. To the latter age the advantage is with the "Natural Premium" plan.

If no interest is accounted for on the excess payments under the level premium plan, and only the actual payments of \$10.34 annually are considered, even then the advantage is with the "Natural Premium" plan for forty-three years, as may be seen by comparing columns 1 and 3. At the end of forty-three years the total payments under the "Level Premium" amount to \$444.62, and under the "Natural Premium" to \$431.65. Thus the advantage of the latter is maintained, under the most favorable comparison, to the advanced age of 64, when, ordinarily, there are few, if any, dependants.

This advantage in the method of paying costs by "Natural Premiums," from age 20 to 64, if improved as any provident man could and should improve it, would be represented by a cash accumulation of \$318.69 (see column 5) at age 64.

It is, therefore, clear that the actual amounts paid in assessments, without considering interest on excesses, amount to a greater sum under the Level than the Natural Premium plan during forty-three years. If the difference in payments is utilized, there could be accumulated \$318.69, as an old age or other benefit.

If insurance protection is continued to the advanced ages, when there are few or no dependants to protect, then the "Natural Premium" plan is not so attractive.

It is a plan that follows "Nature" and conforms to the ordinary conditions in life, and meets the demands of common sense in deciding upon a plan for the protection of dependants at a time when they most need protection.

It is not a plan to provide for old age, or to encourage speculation upon the lives of old people or to build up estates, or to answer for an investment. It is not a plan to be safely or economically operated beyond age 65 or 70 in its pure and simple form. It must be combined in some way with reserve accumulation if protection is to be continued beyond age 70.

DEDUCTIONS FROM THE N. F. C. TABLE.

Column 1 gives the number dying during each year, assuming 100,000 persons living at age 20. Thus, during the first year, age 20 to 21, 500 die. During the second year, age 21 to 22, 501 die, making the total deaths in the two years 1,001. At the end of the fiftieth year, age 69 to 70, 50,698 of the original 100,000 have died. Hence, half of all the original entrants would be dead between age 69 and 70, or at the end of 49.7 years, as shown in column 3 opposite age 20.

Column 2 gives the years of "Life Expectancy." The figures in this column, whether for the N. F. C. Table or any other mortality experience, are almost universally misused when endeavoring to base rate upon "Life Expectancy."

Column 3 gives the "Equation of Life," which is the number of years that will elapse until half of the original entrants at any given age have died. Thus, of 1,000 persons at age 20, 500 will have died within 49.7 years. Of 1,000, at age 25, one-half will have died at the end of 45.2 years. Of 1,000 at age 40, one-half will have died at the end of 31.7 years. And so on for each age, as shown in column 3.

Column 4 gives the number of years that will elapse before an entrant will contribute on the natural premium system an amount equal to the face of his certificate. Thus, a member who enters at age 20 and pays \$5.00 the first year and \$5.04 the second year, and so on, increasing each year according to the N. F. C. Mortality Table, will require 54.7 years to contribute \$1,000. Similarly, a member entering at age 30 will require 45.3 years. The corresponding figures for other ages will be found in this column opposite the respective ages.

(0)	(1)	(2)	(3)	(4)
20	500	45.6	49.7	54.7
21	1,001	44.9	48.8	53.8
22	1,503	44.1	47.9	52.8
23	2,006	43.3	47.0	51.9
24	2,511	42.5	46.1	50.9
25	3,018	41.8	45.2	50.0
26	3,528	41.0	44.3	49.1
27	4,041	40.2	43.4	48.1
28	4,558	39.4	42.5	47.2
29	5,080	38.6	41.6	46.3
30	5,607	37.8	40.7	45.3
31	6,140	37.0	39.8	44.4
32	6,680	36.2	38.9	43.5
33	7,228	35.4	38.0	42.5
34	7,785	34.6	37.1	41.6
35	8,352	33.9	36.2	40.7
36	8,930	33.1	35.3	39.7
37	9,521	32.3	34.4	38.8

(0)	(1)	(2)	(3)	(4)
38	10,127	31.5	33.5	37.9
39	10,749	30.7	32.6	36.9
40	11,389	29.9	31.7	36.0
41	12,049	29.1	30.9	35.1
42	12,732	28.3	30.0	34.2
43	13,440	27.5	29.1	33.3
44	14,174	26.8	28.2	32.4
45	14,935	26.0	27.4	31.4
46	15,725	25.2	26.5	30.5
47	16,547	24.4	25.6	29.6
48	17,404	23.7	24.8	28.7
49	18,298	22.9	23.9	27.9
50	19,233	22.2	23.1	27.0
51	20,214	21.4	22.2	26.1
52	21,243	20.7	21.4	25.2
53	22,326	19.9	20.6	24.3
54	23,466	19.2	19.8	23.5
55	24,668	18.5	19.0	22.6
56	25,938	17.8	18.2	21.8
57	27,280	17.1	17.4	20.9
58	28,698	16.4	16.6	20.1
59	30,199	15.7	15.8	19.3
60	31,787	15.0	15.1	18.5
61	33,468	14.4	14.4	17.7
62	35,246	13.7	13.6	16.9
63	37,126	13.1	12.9	16.1
64	39,111	12.4	12.2	15.3
65	41,205	11.8	11.6	14.6
66	43,411	11.2	10.9	13.8
67	45,729	10.7	10.3	13.1
68	48,159	10.1	9.7	12.4
69	50,698	9.5	9.1	11.7
70	53,343	9.0	8.5	11.1

So much has been said about the undesirability and unattractiveness of the "Natural Premium" or "Step Rate" plan of insurance that column 4 was especially prepared to show that it is a paying proposition for a great many years, even when taken at advanced ages.

No one will deny that the "Natural Premium" plan is the very cheapest possible in the event of early death.

The practical question for decision is (when deciding upon the plan for paying assessments), how long will I probably need protection for dependants, and how long will I probably live?

The needs of protection for dependants is an individual matter exclusively and must be determined by each member for himself. Assistance in the determination cannot be rendered by an appeal to averages. The individual must know his present status, estimate the prospects for the future and make his own calculations as to the time when present and prospective dependants will relieve him from care for their support.

As to how long he will probably live, an approximate idea can be given to him by consulting column 3. According to observed experience, half of a given number of persons at his age (say 35) have survived for 36.2 years. Hence, it is assumed that he has an equal chance to live for that period.

If he were to pay the increasing insurance costs as they accrue from year to year, according to the "Natural Premiums," it would require that he should live and pay for 40.7 years before he would pay out \$1,000.

Should he only live the average life time, 36.2 years, he would pay out as assessments \$671, which would be \$229 less than the sum insured, and hence the "Natural Premium" plan would yield a "profit" for more than half of all who entered at age 35. The "profit," or "benefit," to the heirs of those who died in the first year of insurance, and who had paid one annual assessment of \$6.15, would be \$993.85. To the heirs of those who died in the thirty-sixth year of insurance the "profit" would be \$229 over all payments of assessments.

Why is it not an attractive proposition that will yield to half of all who enter at age 35 "profits" to heir ranging from \$993.85 to \$229?

Each member has an equal chance with every other member of benefitting his heirs to a greater or less extent, according to the year of his death, but which in any event will exceed by at least thirty-three and one-third per cent his total outlay, even though he survive to the age of 71.

If 1,000 members enter into insurance at age 40, half of them will survive for 31.7 years, while no one of these survivors will pay, by "Natural Premiums," a total sum equal to \$1,000 in less than 36 years. It follows that the 500 who die before attaining to 72 years of age will pay out much less than \$1,000 in assessments.

Entering at 60, it would require 18.5 years for a member to pay, by "Natural Premiums," the sum of \$1,000. Half of a given number at 60 would die within 15.1 years, and, therefore, half would pay out much less than \$1,000 under the "Natural Premium" plan, even at that advanced age.

It is just as well to calmly consider this "Step Rate" plan before condemning it by mere inspection of the figures at the very advanced ages.

Insurance is for the protection of dependants, is it not? How many dependants will there be at age 70, anyway?

How much need will there be for it after the age of three score years and ten?

Up to that age you have a good proposition, and you have an equal chance with your associates for living to 70, since beginning as young as 20 only a fraction more than half of all original entrants will have died before reaching that age.

Under the "Natural Premium" plan there is no bother about reserve accumulation and investments and interest earnings. It is a straight, simple insurance proposition, where you "pay as you go," and get exactly what you pay for.

If a man believes that he will be of that number who live beyond the average life time, that he will survive beyond the "Equation of Life," then he may look with disfavor upon the "Natural Premium" plan, which levies large and progressively increasing assessments at the very advanced ages.

It is strange that anyone should have anxiety about protection for dependants beyond the age of 70, since so little need exists for such protection, yet that apparent anxiety is the basis for objection to the "Natural Premium" plan.

If the real purpose were exposed by close analysis of what men really desire at these advanced ages, it would be discovered that they want protection for themselves in old age, and they have an idea that an insurance certificate on their own lives will serve their purpose.

It is a mistaken use of life insurance to undertake to turn it to such a purpose, and there will result disappointment from such an undertaking. However, if the effort is to be made to combine in one contract protection for self in old age as well as protection for dependants during the dependancy period, then the "Level Premium" plan is superior to the "Natural Premium" plan, by virtue of the accumulation to the credit of the former at advanced ages.

THE LEVEL PREMIUM PLAN. There are many things to be said in favor of the straight "Level Premium" plan, and much more to be said in favor of the "Natural

The "Natural Premium," or "Increasing Cost" of Protection is greater than the Level Premium after age 55.

At age 60 the Natural Premium is \$22.75; at 65 it is \$34.39; \$53.65 at 70; and \$85.48 at 75; while at 80 it is \$138.09.

Most men are optimistic and they believe that a long life is allotted to them. This feeling causes them to look at the cost when they are advanced ages and when comparison is made between the Level and Uniform Rate of \$16.62 and the rate that is \$16.86 at 56; \$22.75 at 60; \$53.65 at 70; and \$138.09 at 80, they decide in favor of the Level Contribution Rate.

Their decision often would be otherwise if they considered the cost as set forth in the foregoing analysis.

Yet, it must be admitted, that men of thought and experience and matured judgment favor the Level Premium.

The diagram illustrates its advantages.

COMPARISON OF RESERVES. As there seems to be a rather general impression amongst those who have not given special study to insurance questions that reserves vary to a considerable extent, according to the mortality table by which they are calculated, we have constructed a chart which illustrates in a graphic manner how slight the difference really is on contracts for whole-life insurance.

The data are for age 20, and terminal reserves are used so that the increase as represented by the curves is from nothing to \$1,000. The dotted line corresponds to the Actuaries' Mortality Table; the broken line to the American Experience, and the light continuous line to the National Fraternal Congress Table.

Although these three tables differ materially in death rates at some ages, it will be observed that the three lines are almost identical throughout their length.

The medium continuous line represents a reserve on a contract providing for natural premium payments to the age of 70, with a slight reserve loading to keep the payments level after that age. Although the reserves under this plan, as it will be noticed, begin and end at the same points as those previously considered, yet they are very much lower at intermediate points.

The heavy continuous line represents the reserves under a temporary contract terminating at the age of 70. It will be noticed that at the start these reserves follow much the same course as those under a whole-life contract, but they they decline with great rapidity to zero after reaching a maximum. The table accompanying the chart tells the same story in figures.

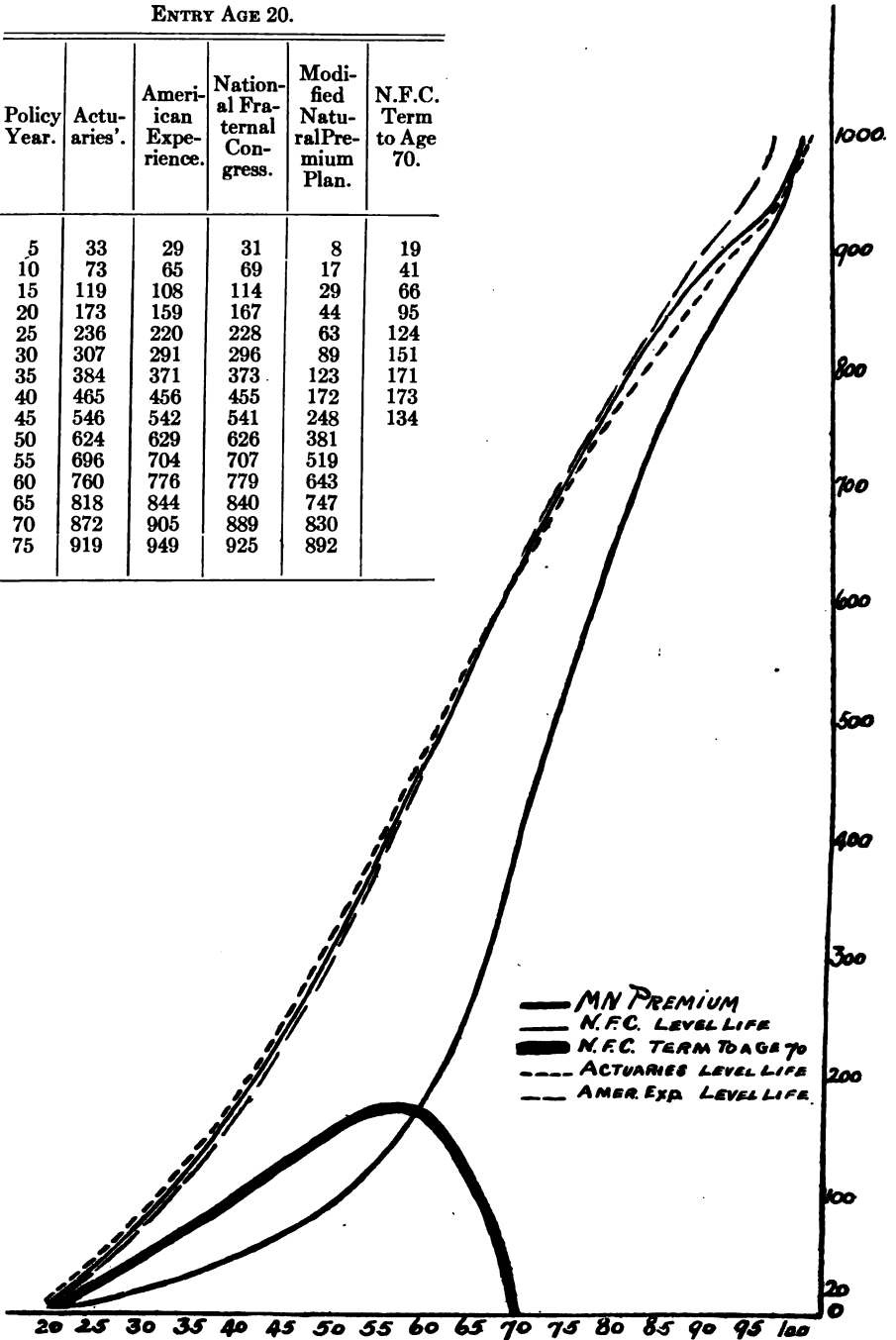
It will be noted that the reserves under the National Fraternal Congress Table are greater than those under the American Experience for nearly 40 years. At the end of the fortieth year there is only \$1.00 difference in favor of the latter, the individual reserve being \$455 and \$456 respectively.

By combining the level and natural premiums the reserve accumulation is kept at a moderate sum, being small in the early years of the contract when there are many members, and large in the later years when the number of members is small, thus avoiding at any period of the contract a large aggregate accumulation.

On a term contract ending at age 70, in the beginning the accumulation approaches in amount the full reserve for a whole life level rate certificate, and greatly exceeds

TERMINAL RESERVES 4 PER CENT FOR
ENTRY AGE 20.

Policy Year.	Actuaries'.	American Experience.	National Fraternal Congress.	Modified Natural Premium Plan.	N.F.C. Term to Age 70.
5	33	29	31	8	19
10	73	65	69	17	41
15	119	108	114	29	66
20	173	159	167	44	95
25	236	220	228	63	124
30	307	291	296	89	151
35	384	371	373	123	171
40	465	456	455	172	173
45	546	542	541	248	134
50	624	629	626	381	
55	696	704	707	519	
60	760	776	779	643	
65	818	844	840	747	
70	872	905	889	830	
75	919	949	925	892	



that of the whole life combined level and natural rate. The term reserve increases for forty years, and then rapidly decreases during the last ten years, being nil at the end of the fiftieth year, at age 70, when the insurance period ends.

The most deceptive kind of a reserve is that accumulated under a level premium term certificate, because of the increasing accumulation that lulls the confiding into a sense of security with a sudden awakening by the rapid disappearance of the basis of his hopes.

THE LAST MAN. Following is from an insurance magazine:

At frequent intervals one hears the statement that certain organizations can continue and pay the last man the face of his certificate, regardless of growth. No insurance organization has ever done this. It is a law of nature that everything must either progress or retrograde. If the latter, there comes a time when normal conditions do not obtain, and then disaster follows. The properly balanced organization is one which provides for normal conditions, which does not rely unduly upon growth and which does not lull itself into a sense of fancied security for the reason that it believes its plans are correct and, therefore, it will perpetuate itself. There must be progress if successful results follow.

Of course an organization will go out of existence if new members are not secured, because all existing members must eventually die. But it is surprising that a well-informed editor should intimate that "the last man" could not be paid if the company or society, which has an adequate and scientific plan, ceased writing new policies or certificates.

The Pennsylvania Company for Insurance on Lives and Granting Annuities was incorporated and commenced business March 10, 1812. For a number of years the company transacted a life insurance business, but finally ceased to accept applications, but continued to receive premiums from existing policy-holders and to pay death claims as they occurred.

At the beginning of the year 1901 there were just twenty-four whole life policies outstanding, covering \$91,500 of insurance. During 1901 there were three policies matured by death for \$8,000, leaving on December 31, 1901, only twenty-one policies in force, with \$83,500 of insurance. During the year 1901 the total premium receipts were \$1,880.24, being \$6,119.76 less than the death claims paid, which deficit was, of course, made good out of the reserve fund, which latter amounted to \$56,975 on December 31, 1901.

Here we have a life insurance business gradually decaying, and yet every claim will be paid in full. The reserve accumulation of \$56,975 is 67 per cent of the total insurance in force—\$83,500—and it will suffice to supplement the premiums in the payment of the claim on the "last man."

CONCOMITANTS OF CHANGE. The transition from one system to another is always attended by friction.

An omelet cannot be made without breaking eggs, and you cannot right a wrong without a disturbance.

It is as stated by a coal miner when discussing the best method of settling labor troubles: "In any great change somebody is going to get hurt."

When we become accustomed to certain conditions, we are tempted to endure evident evils rather than submit to the inconvenience of a change.

These thoughts come from contemplating the situation of the Modern Woodmen of America.

For twelve months continuous agitation has disturbed the membership of that great order.

Few of its members deny the weakness of the present plan.

Those who oppose any change base their argument upon the present splendid condition of the society, and contend that the present plan will suffice for ten, fifteen or possibly twenty years before the cost of protection becomes exorbitant.

The *laissez faire* argument is the only one presented in favor of continuing the present plan. "Do not interfere with existing conditions, and let the future take care of itself," is the sentiment of a very large number of the members.

But those who take this position do not deny that a change from the present plan must be made within a few years.

There is another large class who favor a change but want a very little change. They oppose anything which would be "radical." They favor some makeshift or expedient, which usually takes such form as to permit them to virtually remain as now, and to throw the burden of increase upon future members, whom they suppose will be ignorant enough to join them, and then become burden-bearers for them. This course has been taken so many times by other societies that this class of persons believe that they can successfully follow it, and that American workingmen will continue to voluntarily make of themselves hewers of wood and drawers of water because invited to do so under the guise of fraternity. We place a higher standard upon American intelligence than to believe that they can be hoodwinked in any such fashion.

There are a great host of thinking, conscientious members who realize the seriousness of the situation, and who desire an adequate and scientific and safe plan, but who are divided as to the kind of a plan which should be adopted. The majority of them have a more definite and a clearer conception of their objections to the several plans than they have of the particular plan they would favor.

It is so easy to make objections; so difficult to mark out a satisfactory line of action.

It is impossible to anticipate the action of the next Head Camp.

Political trading for personal advantage will possibly determine the action on readjustment.

Were politics eliminated from consideration, and were there no office-seekers to influence results, it might be predicted that a change to an adequate plan would be made. Some of the head officers believe that such will be the result in spite of the handicap of self-seeking politicians.

MISLEADING STATEMENTS. A society paper contains the following:

The legal reserve theory is false because it assumes that every policy issued will become a claim. This is borne out by the fact, as shown by experience, that the actual amount needed to meet each one million of insurance written has only been \$473,000; lapses relieved the companies of the balance. Therefore, if the estimates of reserve necessary to "pay the last man" is reduced to one-half the present required so-called legal reserve it would appear that the resources will be sufficient for every probable contingency. Fraternalists anticipate making good any deficiency in reserve from greater lapsing, flexible rates and assessments.

The "legal reserve theory" assumes no such thing as stated.

The "legal reserve" is the fund required by statute, and has no reference whatever to the fact of assuming or not assuming that "every policy issued will become a claim."

The legal reserve laws take no cognizance of the method of calculating premium rates. The only requirement is that a fund must be on hand which will equal the difference between the present value of the future premiums and the present value of the outstanding insurance obligations.

If the premium rates are low, the reserve accumulation must be correspondingly large, because the present value of low rates is smaller than the present value of

high rates, and hence it requires a larger fund to make good the difference between such smaller value and the value of the obligations—the insurance liabilities are not affected by low or high rates—every obligation of \$1,000 must be paid, if the organization remain solvent, and it cannot reduce that obligation by reducing rates nor increase it by increasing rates.

The legal reserve law confines its operation to knowing whether or not the fund makes a balance between the two values of premiums and insurance promises.

The law cares nothing about the source from which the necessary accumulation is obtained, it only has to do with being satisfied that the "legal reserve" is in possession of the company in cash or in good and acceptable securities.

Misleading statements are detrimental to the general interests of fraternal orders, and those who know better, or ought to know better, should not indulge them because they happen to pander to a present prejudice.

CRITICISM. To freely and frankly and fairly discuss the questions now before the fraternal world is to be more or less critical in all that is written concerning the present methods, especially in reference to present rates of assessment of most of the fraternal orders.

Criticism is never pleasant, and consequently it is natural that the officials of some orders should feel inclined to resent gratuitous comments which more or less reflect upon the conduct of their societies.

If the criticisms are true, it is not well for any official to feel resentment, though he may be temporarily hurt.

The truth must prevail, and the sooner it is recognized the better for those who are not in line with it.

No one likes to be told of his errors, especially when the telling of them is in a public way, and yet the correction of many mistakes is only possible by having them publicly pointed out.

The animus of the criticism should determine whether it is resented or accepted in good spirit.

We should always profit by criticism. At the same time it is impossible for anyone to feel other than resentful when the critic is an enemy to the cause, or to the organization which is criticised.

When it is known that the criticism is from a friendly source and the purpose is to serve the best interests of those who are criticised, it can, and should, be accepted in a friendly and appreciative way.

However, a critic is never popular, and he is usually tolerated as a necessary evil.

A few persons have been heard to deplore this spirit of criticism, and this disposition to point out defects, and this undertaking to present correct principles as applicable for successful operation.

Some persons construe such a spirit, and such a disposition, and such an undertaking as evidence of a belief that the fraternal orders are in a very bad way, and are going rapidly down hill to the demerit bow-bows.

That is a narrow and superficial view.

The fraternal orders are becoming stronger under criticism, because they are profiting by it. They are becoming more firmly fixed as life insurance organizations, because they are setting about to remedy defects in their plans.

Criticism never hurts when the criticised person or organization at once sets about removing the causes of criticism.

Criticism strengthens when those who are criticised profit by it.

Criticism insures success when those who criticize are earnest advocates of the subject of criticism.

A friend's criticism is a power for good, and in no other way is it possible to make so great improvement as when there is a mutual and earnest and honest investigation of defects within the circle of friendship.

It is folly to talk of the failure of the grand cooperative effort which has builded up the great provident institution known as the Fraternal Beneficiary Societies of America.

It is because they are so great, and because of the glorious future that awaits them, that it is necessary to be sure that they are operated upon right lines, and that any defects in plan should be cured while they are in the heyday of their prosperity.

For fifteen or twenty years prior to 1895 the critics of fraternal orders were altogether found amongst the officers and representatives of "old line" companies. The criticism indulged by them was unfriendly, was unfavorable, was unfair and was unjust.

The fraternal orders grew and prospered, but they did not concede the truth of such criticisms, and, therefore, made no effort to profit by them. The criticism did not hurt the fraternal orders, neither did it benefit them. The officials of the societies resented it, and because of its unfriendliness and unfairness they took no heed, even when there was truth in it.

Since 1895, when the first criticisms were indulged by members of the National Fraternal Congress, how different has been the situation.

The friends of fraternal societies have been investigating their conditions, have been studying their positions, and have been undertaking to discover what was necessary to be done to make them permanent and stable insurance institutions.

The criticisms which have come from the officers of these fraternal orders, and from the editors of the official organs, and from the writers in the independent journals have been no less searching, and, indeed, scorching, than the criticisms of old line agents and representatives.

But there has been a wonderful difference in the effect of these criticisms, because they have been made by friends, with friendly intent, and with friendly regard for the future of these great institutions.

The societies have continued to grow and prosper under the criticisms of these friends—and they have done more than that, their plans have been improved, and steps are being taken to place them upon a firm and sound basis so that they will endure for all time.

Criticism properly made and properly received is the very basis of all progress and the foundation for all success.

The strength of fraternal insurance is shown by its resistance of unfriendly criticism, and by its acceptance of the criticism which is intended for its improvement.

Nothing can stop or prevent the progress of cooperation amongst the people, because the people are all-powerful.

Capital and combination may throw obstacles in the way, but ultimate success is a certainty for the majority of the provident institutions which are now making it possible to protect the home by mutual cooperation.

THE HOME OF BROTHERHOOD. At the dedication of the Carnegie library in Washington, D. C., the donor said: "Free libraries maintained by the people are cradles of democracy, and their spread can never fail to extend and strengthen the democratic idea—equality of the citizen, the royalty of man. They are emphatically fruits of the true American ideal."

A beautiful truth, beautifully clothed!

If there is any other institution than the church that is better for a town, or a village, or a community, than a public library, it is the lodge room of the fraternal beneficiary society.

The lodge is the home of brotherhood.

Around its altars gather men who solemnly obligate themselves to protect the loved ones of home from the cold embrace of misery, want and despair.

About the fireside and within the family circle there can be found no more faithful compliance of pledges to brotherly consideration than in the lodge room of the true fraternal society.

HEALTH AND ACCIDENT INSURANCE. The principal benefit granted by the British Friendly Societies was that of sickness insurance. For a level and uniform weekly contribution there was promised and paid a weekly benefit of a small amount ranging from five shillings to ten shillings a week. After an illness had continued for six months the weekly benefit was reduced, if originally at ten shillings, to half the amount, or five shillings. If the illness or disability continued beyond two years the weekly benefit was further reduced to one-quarter pay, or in the case of ten shillings originally it was reduced to two and one-half shillings per week. This last benefit was continued indefinitely during the disability of the member, even though the disease became chronic. The liability for sick pay increased with the advance in age and the friendly societies found themselves in an insolvent position because of the large amount of claims presented at the advanced ages. The cost of sickness insurance increases with the increase in age in the same manner that the cost of life insurance increases with the advance in age. The equal and uniform contribution rates for sickness benefits failed in their adequacy just as equal and uniform contribution rates failed in adequacy for payment of death claims, due, as stated, to the fact that the liability for either sickness or death insurance has an increasing cost with the increasing age of the membership.

Very recently there has been great activity amongst what are called health and accident and casualty companies in promoting the business of sickness and accident insurance. Almost without exception these companies charge an equal and uniform rate, but they save themselves somewhat by reserving the right to cancel the insurance upon notice. Under such a contract, when the cost of the protection granted becomes excessive or exceeds the contribution rates of course they can relieve themselves of the insurance liability by cancelling the insurance contract.

For many years sickness benefits have been granted by fraternal societies, but these have been incidental rather than the main business of the organization. Nearly every one of the secret fraternal orders grant some form of sickness relief or benefit. It has not been in the way of a business, but rather as a relief to those in need and only the members who feel themselves in need of the relief apply for it.

There have been no requirements for valuations either from the health and accident companies or from the fraternal societies which have granted sickness and accident benefits. However, under the provisions of the Mobile Bill and the later New York Conference Bill and under the laws of the States where these bills have been enacted, the requirement has been made for the valuation of disability benefits. Whether or not the Commissioners will rule that this includes the sick and accident benefits is not yet determined. Certainly the provision requires a valuation of total permanent disability benefits and there is reason for the requirement of a valuation of the sickness benefit where the contract covers the whole period of life or a term of years, since the liability increases with age. In Great Britain the friendly so-

cieties, or at least the registered friendly societies, must make a valuation of their sickness benefits every five years. In principle the valuation of sickness benefit is the same as the valuation for death benefit.

PERMANENT TOTAL DISABILITY. Insurance against permanent total disability is included in the insurance for disability on account of diseases or accident, as granted by the friendly societies, and as granted by the fraternal beneficiary societies in America for many years under the express provision for total and permanent disability. In 1902 I completed the first investigation of permanent total disability experience for the Knights of the Maccabees of the World, and in 1909 I supplemented the experience of that society with its experience from 1902 to 1909 and that for the Knights of the Modern Maccabees and of the Royal League and of the Ladies of the Modern Maccabees and the Ladies of the Maccabees of the World. The data obtained by me from the experiences of these societies has been employed in the construction of several tables which provide for the computation of contribution rates for combined death and disability benefits.

Many fraternal societies grant total permanent disability benefits, and ordinarily these are payable in ten equal annual instalments, sometimes in twenty semi-annual instalments and sometimes in one payment on proof of disability. Some societies require a proof of disability and then a probation period of six months, when a second proof must be made and, if satisfactory, the first instalment of the disability benefit is paid. After this some societies continue to pay the instalments without further proof. In other cases the society requires proof each six months or each year as the disability instalment is due and payable. Some societies promise to pay the certificates by instalments at age 70, provided the member is disabled by age or otherwise. Other societies assume total permanent disability at 70 and promise to pay the face of the certificate by instalments on attaining that age.

Within the last three or four years the life insurance companies have taken up this form of insurance, first in the way of promising to relieve the policy-holder of further premium payments in the event of permanent total disability, if prior to age 60. That feature is now contained in the policy contracts of most every insurance company. Many of them have gone further and promise to pay the face of the policy in twenty annual instalments in the event of total permanent disability provided it occur prior to age 60, while others do not limit the age, and others pay the benefit if the disability occur prior to age 70. Where the premium payments are discontinued in the event of total permanent disability sometimes an extra premium is charged, sometimes it is not. I believe the Travelers Insurance Company was the first to discontinue the premiums in the event of total permanent disability and made no extra charge for this benefit. Complaint was made of this practice by the Ohio Insurance Department and after that a nominal extra premium was charged by the Travelers. Many of the companies, however, make no charge for the discontinuance of premium payments in the event of permanent total disability. Other companies have a graded extra premium rate according to the age of the insured. Almost all the companies, as stated, limit the liability for total permanent disability benefits or for the discontinuance of premium payments in the event of permanent total disability to the occurrence of the event prior to age 60. Almost all of the fraternal societies which promise a permanent total disability benefit also promise the face of the certificate by instalments at age 70, and hence this provision virtually limits the occurrence of permanent total disability prior to age 70.

READJUSTMENTS. It is well that we learn from experience, and an experience covering almost any phase of insurance can be found in England. Some of our

societies have placed new members on adequate rates into classes separate from the old members on inadequate rates; other societies contemplate such a course, and under the valuation sections of the laws in States which have enacted the Mobile Bill or the New York Conference Bill there is a provisional requirement that such separation be made. Writing of a similar provision in the rules of the Manchester Unity, Mr. Watson, the actuary, says:

It is provided by General Rule 82 that in cases wherein lodges reduce benefits or increase contributions (or both) under the instructions of the Board of Directors the members admitted after the date of valuation or (in certain cases) within the five years previous to such date shall receive the full benefits corresponding with their contributions; and such members are to form a new and distinct section in respect of which separate accounts are to be kept.

The meritorious purpose of this provision is to safeguard the interests of new members by preventing the absorption of the funds arising out of their contributions by the claims of the older members in cases wherein the latter have failed to accumulate adequate reserves against their own liabilities. In connection with the Eighth Valuation we were instructed to value the sections separately in all cases in which the funds of lodges were divided, and this instruction has brought the system under our special notice. The result has been to show to us that the system is, practically, of somewhat limited value, notwithstanding the admirable principle which it expresses. The first effect of a reduction of benefits or increase of contributions is almost invariably loss of credit, and though this may be of temporary duration only, its reflection is at once seen in the falling off of admissions. Every new section opened in such circumstances is numerically weak, often extremely so, and for a lengthy period there is little scope for the operation of average results in sickness and mortality experiences. The advantage of mutual assurance between the new and old members being entirely lost, the young members, thrown on the risk of sickness and death as a class apart, are frequently in worse cases than they would have had their contributions been paid into the common fund even with the liability for an existing deficiency hanging over it. It is obvious that unless there is a strong probability that a steady influx of members will be maintained the "new members' section" must be subject to the risk of serious fluctuations—and that neither the accretion of a surplus nor the growth of a deficiency in such a section can be regarded as establishing anything with regard to the adequacy of the contributions of the members comprised in it.

Whilst it is of the first importance that the interests of young members should be protected, we are impelled to the belief, on review of all the facts, that the system of separate sections does not substantially achieve this purpose; as a general plan, and excepting special cases, it appears to us to be the better course, whilst insisting always that financial changes shall be confined to the members who are responsible for the existence of the deficiency, to retain the lodge as the unit of the assurance organization, summarily closing those few branches which from incurable unsoundness are as little likely to obtain new members as they would be unable to properly safeguard their interests.

The concluding suggestion in regard to the retention of the lodge as a unit is applicable to the whole society under the American system of a centralized government, and I have adopted a similar course in advising societies which have fixed a scale of adequate rates for new members while leaving the old on inadequate rates. My advice has been to keep separate only the accumulation required to maintain level and uniform the rates for the new members and to treat as one fund the contributions for current mortality, and to permit all savings and gains to remain in this fund for the advantage of the general membership regardless of the source of the surplus. This course has been advised because it is right in view of the fact that the new class must be instituted from the expense contributions of existing members. Where this relation of mutual cooperation and unity is retained the work of securing new members can proceed as when the latter were obtained prior to the adoption of an adequate rate scale, and the existing members are assured of all advantages from "new blood" and from gains and savings incident to the introduction of new lives.

VALUATION STATISTICS.

Different methods have been adopted for keeping records for statistical purposes, each of which has some special advantage. The suggestions hereafter made should be considered in connection with existing methods and adapted to the practice of the office to produce as little disturbance as possible for the required results.

One thing I would especially impress: Compile your statistics so that duplication of work will not be necessary in obtaining data for the annual report and the valuation. The usual method of arranging statistics for the annual report to Insurance Departments will not supply the required data in proper form for a valuation. But the statistics can be prepared to serve both purposes and save double labor.

Every office should be equipped with statistical cards. The installation of the card system is neither so laborious nor expensive as commonly supposed, if the work is properly directed. Many offices now have statistical (as well as record) cards. Many have not. The suggestions and sample sheets answer for either situation.

There are three methods of valuation allowed to Fraternal Beneficiary Societies under Statutory enactment. In the "New York Conference Bill" they are designated, "Net," "Tabular," and "Accumulation" methods of valuation. One form of statistics is suitable for either method, namely: A sheet giving the amounts of protection by ages and years of entry and form of certificate. The best arrangement for this sheet is the following:

<i>Form of Certificate.</i>		<i>—Years of Entry—</i>				<i>Amount of Protection.</i>
<i>Entry</i>						
<i>Ages.</i>	1913.	1912.	1911.	1910.		etc.
18	1000	1000	1000	1000		etc.
19	1000	1000	1000	1000		etc.
20	1000	1000	1000	1000		etc.
21	1000	1000	1000	1000		etc.
etc.	etc.	etc.	etc.	etc.		etc.

There must be a separate sheet for each form of certificate. That is, one for the Whole Life, one for the Term, one for the Death and Old Age, or other form of benefit. The valuation factors are different for the Ordinary Whole Life from those for the Term to Age 60, or for the Death and Old Age. With many different forms the work of preparing statistics is considerable, unless there are statistical cards properly arranged, when the labor is reduced to the minimum.

Opposite the ages of entry in the columns for the years of entry are given the amounts of protection outstanding as of December 31 for the year of valuation.

If the "Net" method of valuation is employed, the amounts of protection are multiplied by the proper mid-year reserve values. The total of the products will give the required "net reserve" accumulation.

If the "Tabular" method is used, the amounts of protection are multiplied by the rates of contribution and the products entered upon a sheet of the form above indicated and then summed upward diagonally from left to right to obtain the contributions by attained ages and then are multiplied by modified annuities to obtain the "present value of future contributions." The amounts of protection then are summed diagonally upward from left to right to obtain the protection at attained ages and the amounts are multiplied by modified single premiums to obtain the "present value of the promised benefits." The difference between the present values of benefits and contributions represents the required accumulation to be in possession of the Society to make it technically solvent.

NOTE.—"Tabular" is hardly description of a valuation of "promised benefits" and "Future Net Contributions," but is quoted from another in the absence of a better term.

For whole life contracts, life annuities must be used; and for term contracts (for a designated period or to a given age), temporary annuities must be employed to obtain the present value of future contributions. The annuities must be modified to obtain "mid-year" values.

$$a_{x+1/2} = (a_x + a_{x+1}) \div 2.$$

Similar single premiums must be employed and modified.

$$A_{x+1/2} = (A_x + A_{x+1}) \div 2.$$

When monthly contribution rates are to be valued the annuities must be on the monthly basis.

If the "Accumulation" method is adopted, then the amounts of protection are multiplied by the proper accumulation factors to secure the required "credits" for those members entitled to them. These "credits" correspond to the "net reserve" obtained by the "Net" valuation method. In fact, the "Accumulation" method produces "net reserves," and these will be identical with the "net reserves" secured under the "Net" valuation method when the contribution rates are deduced from the mortality table used in the valuation, assuming the same rate of interest. The accumulation factors are obtained by employing the u and k , or u and c columns in the identical manner of computing reserve values per \$1,000, assuming the same rates of mortality and interest. Or, preferably by employing the accumulation factors ${}_nU_x$ and ${}_nK_x$.

It is a simple sheet of statistics that is required for the valuation of certificates with level rates of contribution graded to ages of entry.

It is not a simple matter to those first undertaking the work to extract the required data from the records.

It is not easy to write down a plain statement of the best method of accomplishing the task where statistical cards are not properly kept, or not kept at all.

In the absence of cards there is always a membership register. The first suggestion will be in reference to the transfer of the data from the register to the sheet.

In this connection it is well to caution against the use of statistics carried forward from year to year by additions and deductions. The numerous changes incident to transfers from one lodge to another, and due to lapses, reinstatements, deaths and new entrants, make an accurate accounting very difficult. An accurate record is not impossible, but it is assured only by everlasting diligence and intelligent checking. Where there is such accounting the statistician will know how to secure the valuation data without suggestion.

For transferring the data from the membership register the following form is recommended:

Begin with the first page of the register for members in good standing December 31st, and make a tally mark opposite the year of entry on the line for the certificate amount and in the column for the year of entry. Make a tally for the next member in good standing, and continue to the completion of the list. With the form properly ruled, two clerks can make the tallies for several thousand in a day of eight hours. Large sheets ruled for five squares to the inch (or to suit your case) can be purchased at almost any book store. Where there are a number of certificate amounts it will require several sheets, but with proper arrangement and table space they can be manipulated without much trouble.

If there are record cards instead of a register, the same process will be pursued by beginning with the first card in the drawer and tallying successively as stated.

For example, suppose the first name (on register or card) is of a member who entered at age 18, carried a certificate of \$500, and joined in 1913. The call would

ENTRY CERTIF ACCS AMOUNT	1913	1912	1911	1910	1909	1908-STD	TOTALS
500	9000	8500	8000	7500	7000	6000	9246000
1000	4200	34000	33000	353000	30	25	199000
1500	16500	19500	15000	18000	9	6	90000
2000	12000	714000	918000	510000	4	3	68000
SUB TOTALS	7779500	7176000	6874000	6770500	5657000	4646000	4030000
500	10000	10500	9500	8500	10	8000	10351500
1000	40000	41000	37000	34000	26	36000	214000
1500	22500	21000	24000	1725500	9	13500	118500
2000	20000	22000	16000	48000	3	6000	84000
SUB TOTALS	8592500	8794500	8084500	7276000	48	50500	468000

18

19

be "18," "500," "1913." The operator would follow the call and be ready to make the tally in the right space on the call of "1913." If the entry age were 45 (or one to be entered on a second or third or fourth sheet) the operator soon would be able to locate it without delay. The sample form shows tallies as in practice actually made.

When the sheets are completed, the tally marks are counted and the number entered in the space (preferably in red ink) for the certificate amount. In the sample form, for age of entry 18, and for the several certificate amounts and the year of entry 1913, there are 18 of the \$500 certificates, 42 for \$1,000, 11 for \$1,500, and 6 for \$2,000, and a subtotal of 77 certificates and \$79,500 of protection. In the same space enter the amounts of protection (equal to the number multiplied by certificate amount). By adding together the numbers of certificates for each age of entry and multiplying the total by the certificates amount the product should equal the sum of amounts for each age of entry, which is a check of the accuracy of the detailed multiplications. This gives the total number of certificates and amount of protection for each age of entry, and is important information. The sums of the subtotals in the columns for years of entry give the total number of certificates and amount of protection by years of entry—also important information. The grand totals for entry ages should be the same as the grand totals for years of entry, and is the final check of the completed sheet. These grand totals should give the total number of certificates and amount of protection taken directly from the register or record cards. The names on the register, or the cards, could be counted to verify the total number of certificates shown on the sheets. Or the comparison could be made with the returns from the clerks of local lodges. The application of some effective check upon the work should not be neglected.

If the office has statistical cards, they should be filed by: 1, ages of entry; 2, years of entry; 3, certificate forms; 4, certificate amounts. To obtain the data for the valuation sheet it is only necessary to count the cards for the certificate amounts and enter the number opposite the age of entry, on the line of the amount (one line only for each certificate amount) and in the column for the year of entry. For example: 18 for \$500; 42 for \$1,000; 11 for \$1,500, and 6 for \$2,000. The transcribing can be done rapidly from statistical cards, and the checking is facilitated by the count of the total cards for each age of entry and all of the years of entry for that age.

The subtotals of numbers of certificates and amounts of protection should be transferred to two sheets for the advantage of compact form, as below.

NUMBER OF CERTIFICATES.

Entry Ages.	—Years of Entry—						Totals.
	1913.	1912.	1911.	1910.	1909.	1908.	
18.....	77	71	68	67	56	46	385
19.....	85	87	80	72	48	66	438
20.....	65	92	81	80	66	58	442
21.....	54	61	73	65	54	64	371
22.....	72	55	60	59	57	67	370

AMOUNTS OF PROTECTION.

Entry Ages.	—Years of Entry—						Totals.
	1913.	1912.	1911.	1910.	1909.	1908.	
18.....	\$79,500	\$76,000	\$74,000	\$70,500	\$57,000	\$46,000	\$403,000
19.....	92,500	94,500	86,500	76,000	50,500	68,000	468,000
20.....	88,000	81,000	91,000	85,000	55,000	71,000	471,000
21.....	79,000	66,000	72,000	74,000	48,000	57,000	396,000
22.....	69,000	72,000	61,000	65,000	64,000	44,000	375,000

These sheets (with a carbon) can be made in a few minutes on an adding machine with eighteen-inch carriage, and have the advantage of totals for checking.

The sheet giving the number of certificates is of no use to the valuer. The sheets giving the amounts of protection by ages and years of entry is the one required by him.

Both sheets can be used by the office in preparing schedule VI of the annual report for Insurance Departments.

The number of members (or the number of certificates, which will answer the purpose of the report) at attained ages is obtained by diagonal upward summation of the numbers in the first sheet, assuming the entry age in the current years as the attained age December 31 of that year. (In fact, on the average, the members are one-half year older on December 31 of the calendar year, and this fact is taken into consideration in making a valuation or in a mortality investigation.)

Thus: There would be 77 members (certificates) at attained age 18. At attained age 19 there would be the 85 entrants at age 19 in 1913 and 71 entrants at age 18 in 1912, making 156 as the number at attained age 19. Similarly for attained age 20 we have the sum of the 65 entrants at age 20 in 1913, and 87 entrants at 19 in 1912, and 68 entrants at 18 in 1911, making 220 as the number at attained age 20. For attained age 21 the summation would be $54+92+80+67$ equal 293. For age 22 the summation would be $72+61+81+72+56$ equal 343. The same process is continued for other ages. The work is facilitated by diagonal ruling of the sheets.

The amounts of protection at attained ages are obtained by the identical process explained for members.

The above procedure gives the number of certificates and amounts of protection by attained ages for each form of certificate. The same for the different forms (if there is more than one form) of certificates must be combined into one column for members and one for protection as the exhibit for schedule VI.

The totals of members and amounts thus obtained for attained ages should correspond with the grand totals by ages and years of entry.

Schedule VI also calls for "the Mortuary Assessments received during the year." This has been construed to mean the total amount of the contributions less the expense deductions. This is obtained by getting the net monthly contributions for each form of certificate (gross rates less expense deductions) and using these as multipliers for the protection at ages and years of entry. Thus: If the Whole Life Net Rate per \$1,000 at age 18 is 68 cents, and assuming that the sample sheet shows the protection for the Whole Life form, 68 would be multiplied by 79.5, 76, 74, 70.5, 57, and 46, and the products entered on a sheet for contributions by ages and years of entry, thus:

AMOUNT OF ONE ASSESSMENT.

Entry Ages.	—Years of Entry—					1908.	Totals.
	1913.	1912.	1911.	1910.	1909.		
18.....	54.06	51.68	50.32	47.94	38.76	31.28	274.04
etc.....	etc.	etc.	etc.	etc.	etc.	etc.	etc.

The total of \$274.04 will be given if a cross tabulating adding machine is used, and its correctness is checked by the product of the total protection by the contribution rate per \$1,000.00, or 403×68 equal 274.04.

The amounts of protection for other ages and years of entry are multiplied by the corresponding net rate for the respective ages of entry and the products entered as for age 18.

When the sheet has been completed a diagonal summation from left to right will give the amount of one assessment at attained ages, which, multiplied by 12, gives the amount of 12 assessments on the protection in force December 31. Similar sheets must be made for each form of certificate and all combined for the total contributions.

The amounts thus finally obtained must be modified to secure a total corresponding with the actual cash received from the net contributions during the year. This modification is made by dividing the total, as above obtained, into the actual total receipts, and use the quotient as a multiplier for the amounts at each attained age, which are obtained from the diagonal summation.

If there is a considerable difference between the cash receipts from net contributions and the total of 12 assessments obtained from the combined sheets, some error has probably been made and should be found.

Obviously 12 assessments would not be received on the certificates written in the current year (1913 in the example), because the members are admitted in every month of the year. The average number of assessments received from the 1913 entrants would not exceed 6 and might be 5. The foregoing method, therefore, would overstate the contributions received in the current year, but this excess, ordinarily, is offset by the amounts received from members who lapse and die during the year, which receipts are not shown in this exhibit. Under normal conditions the method given will approximate the actual facts. As stated, if the difference between the actual receipts and the estimated under this process is very large, then it may be necessary to take the average number of assessments received in the current year, and also find approximately the receipts in the year from those who paid one or more assessments before death or lapse, in order to furnish a satisfactory column for schedule VI of the annual report. This seldom occurs.

Many valuations were made in 1913 for Fraternal Beneficiary Societies and different methods were adopted to obtain the valuation data. The statistician of one society adopted the following form:

NUMBER OF MEMBERS.

<i>Years of Entry.</i>	<i>—Attained Ages—</i>				<i>etc.</i>
	<i>18.</i>	<i>19.</i>	<i>20.</i>	<i>21.</i>	
1909.....	...	...	...	10	<i>etc.</i>
1910.....	...	...	28	39	<i>etc.</i>
1911.....	...	99	134	171	<i>etc.</i>
1912.....	93	167	168	193	<i>etc.</i>
Totals.....	93	266	330	413.	

In this form the ages are at the top instead of at the side of the sheet, and the footings of columns give the total number at attained ages. The number at ages of entry would be obtained by diagonal summation from left to right. The above shows the combined form for members. To obtain the same for protection, first it would be necessary to get the details for certificate amounts.

Another form is to have the ages at the side and the years at the top of sheet, but to begin with the first year of operation for the first column at left, and the current year for the last column to the right. In such form the diagonal summation must be upward from right to left to obtain attained ages. The work under this method is awkward to most operators.

The means to the end are immaterial so far as results are concerned. However, they should be chosen to suit office conditions, and the foregoing details are given in the way of suggestions for the accomplishment of results.

When the data are in proper form the cost of valuation should be much reduced. Indeed, the secretaries should agree upon a uniform blank for reporting statistics, and should secure a scale of fees from valuers on the ordinary forms of certificates.

As the situation now is, the actuary has great difficulty in making an advance estimate of his charge for valuation. In the first place, it may be necessary to compute special valuation factors. In the second place, he may have to rearrange or combine the data before they can be utilized—and very often must have errors corrected which have been committed through lack of proper checking.

In passing, it may be remarked that the first valuation under Section 23b of the New York Conference Bill will always involve more work and a larger charge than subsequent valuations. This is also true of valuations under Section 23 and 23a where valuation factors must be computed for special forms of certificates. These factors serve for subsequent valuations.

If the "Tabular" method of valuation is adopted, the society could reduce the fee for valuation by making the multiplications of the net contribution rates by the amounts of protection for ages and years of entry. Or the office could save the time and labor of this work by having the results furnished by the valuer—it being remembered, as hereinbefore shown, that these data can be used not only for the valuation, but also in the preparation of schedule VI of the annual report.

At the next meeting of the National Fraternal Congress of America the secretaries' section could spend some time profitably in consideration of these matters.

The forms suggested for the compilation of the number of members (or certificates) in good standing and the amount of protection in force as of December 31, are suitable for the compilation of statistics to show the number of deaths and lapses during the current year by ages and years of entry and by attained ages. If these statistics are prepared, then a close estimate can be made of the amount contributed during the year by those who have lapsed and died by assuming an average of six assessments for entrants in all years excepting the current year, and for that year assuming three or four assessments, according to whether or not the first assessment is paid at date of entry, or at the end of the month, or in the month after admission.

In cases where the amount of the certificate is scaled for a number of years, or where the protection increases from first year of entry during Life Expectancy, or at age 70, or until a designated amount is paid in assessments, the statistics are compiled as of the face of the certificate in the manner described. The valuer will make modifications by proper deductions for actual insurance in force at date of valuation.

Societies having natural premium rates (contributions increasing annually) can secure amount of contributions by multiplying the protection at *attained ages* by twelve times the rates of contribution for respective attained ages and deducting for the current year as indicated for the average number of assessments collected in that year.

The management should be informed each year concerning the Mortality experience of the Society. There is very little extra work involved over that of making a valuation, for the valuer to report upon the mortality experience. The additional data are the amounts of claims by attained ages. These can be obtained by compiling the statistics for certificate amounts at ages and years of entry on the claims incurred during the year and then summing diagonally for attained ages, as explained for amounts of protection in force. In order to closely approximate the amounts of protection exposed to risk during the year there should be given the protection at attained ages on the previous December 31, that the mean of the protection at the beginning and end of the current year could be ascertained, which

added to the claims incurred at attained ages, will give the protection exposed at attained ages during the year. From these data the loss rates per \$1,000 are obtained. If death rates per 1,000 are desired, then the number of members (or certificates) should be treated instead of amounts of protection.

If it were concluded (and it is desirable) to investigate the past mortality experience for comparison with the current year, it would suffice (for approximate and practical results) to furnish the amounts of protection and the amounts of claims incurred, as reported in schedule VI, for as many years as the report had been made.

I will make some examples of valuation by use of the foregoing sample exhibit of protection by ages and years of entry.

The first illustrates the net reserve valuation. I have taken the "terminal" instead of the "mid-year" values for the reason that they are found in the Appendix to this book for ordinary whole life protection, which is assumed in this case. For ages 18, 19 and 20 I have used the reserve values for age 20. Assuming that the insurance was written and in force January 1st of each year, at the end of 1913 there should be, and there is supposed to be, the terminal reserve at the end of one year for 1913 issues; at the end of ~~three~~ ^{two} years for the 1912 issues; at the end of ~~four~~ ^{three} years for 1911 issues; . . . at the end of six years for the 1908 issues. Therefore, we would multiply the protection issued in 1913 by the terminal reserves at the end of one year for ages 20, 21 and 22, being (see Table of Reserves) \$.00578, \$.00604, \$.00632 (or \$5.78, \$6.04 and \$6.32 per \$1,000 protection). The protection issued in 1912 would be multiplied by the reserve values at the end of the second year; and similarly for other years of issue.

The following table exhibits the protection and net reserve values. The total protection of \$2,113,000 requires \$43,566.56 in reserve accumulation as supplemental to the present value of future contributions to make it equal to the present value of promised benefits.

PROTECTION BY AGES AND YEARS OF ENTRY.

Entry Ages.	Years of Entry.						Totals.
	1913.	1912.	1911.	1910.	1909.	1908.	
18	79,500	76,000	74,000	70,500	57,000	46,000	403,000
19	92,500	94,500	86,500	76,000	50,500	68,000	468,000
20	88,000	81,000	91,000	85,000	55,000	71,000	471,000
21	79,000	66,000	72,000	74,000	48,000	57,000	396,000
22	69,000	72,000	61,000	65,000	64,000	44,000	375,000
Totals . .	408,000	389,500	384,500	370,500	274,500	286,000	2,113,000

TERMINAL RESERVE VALUES.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
18	459.51	896.04	1334.22	1729.37	1782.39	1760.42	7961.95
19	534.65	1114.16	1559.60	1864.28	1579.14	2602.36	9254.19
20	508.64	954.99	1640.73	2085.05	1719.85	2717.17	9626.43
21	477.16	813.12	1357.20	1896.62	1568.64	2278.86	8391.60
22	436.08	928.08	1202.31	1742.00	2185.60	1838.32	8332.39
Totals . .	2416.04	4706.39	7094.06	9317.32	8835.62	11197.13	43566.56

In the ordinary valuation of certificates issued throughout the year, one-half a year duration is assumed, and "mid-year" reserve values must be employed. I have fully explained the method of obtaining "mid-year," or "mean" reserve values. (See "Definitions.")

The tabular reserve values assume a net contribution rate deduced from the Mortality Table from which the Reserve Values are derived.

The foregoing is designated a "net reserve valuation," and the total of \$43,566.56 would be reported as the net reserve liability. For technical solvency the society or company should have net assets not less than the reserve liability.

Under the "legal reserve," or net valuation laws for life companies, the writing of new business would be suspended should the net available assets be shown on valuation to be less than the reserve value of the outstanding policies. And should the company fail to make good the impairment within a given time it would be barred from doing business in foreign States and placed in the hands of a receiver in the home State.

The valuation laws for fraternal beneficiary societies are less stringent. The most recent enactments have been given (in substance) under the title of "The New York Conference Bill," pages 66-72.

The second example will exhibit the results of a valuation of the promised benefits and future net contributions as in practice actually collected, on the assumption of whole life protection. Instead, however, of taking the tabular net premiums, the contribution rates will be

For age 18 annually \$7.20 per \$1,000.
 For age 19 annually \$7.80 per \$1,000.
 For age 20 annually \$8.00 per \$1,000.
 For age 21 annually \$8.20 per \$1,000.
 For age 22 annually \$8.40 per \$1,000.

The protection for each age and year of entry is multiplied by the rate for the age of entry. That is, 7.20 is the multiplier for 79.5; for 76.0; for 74.0; for 70.5; for 57.0; and for 46.0. The results are as follows:

PROTECTION MULTIPLIED BY CONTRIBUTIONS.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
18	572.40	547.20	532.80	507.60	410.40	331.20	2901.60
19	721.50	737.10	674.70	592.80	393.90	530.40	3650.40
20	704.00	648.00	728.00	680.00	440.00	568.00	3768.00
21	647.80	541.20	590.40	606.80	393.60	467.40	3247.20
22	579.60	604.80	512.40	546.00	537.60	369.60	3150.00
Totals ..	3225.30	3078.30	3038.30	2933.20	2175.50	2266.60	16717.20

Summing diagonally the protection and the products of protection by contributions, the following columns of protection and amount of one year's contributions are obtained for attained ages. Then multiplying by the single premiums for whole life insurances and annuities the present values of the protection and future contributions are obtained.

As hereinbefore explained, for a valuation as of December 31, for certificates written in every month of the year of issue, the single premiums for insurances and annuities must be modified to give "mean" or mid-year" values.

In the following it is assumed that the certificates were issued January 1 of each year, and hence terminal values are given by using the whole life single premiums and annuities taken from the Table in the Appendix. \$211.86 is the multiplier for the protection at attained ages 18, 19 and 20; \$216.42 at 21; . . . \$247.75 at attained age 27. The whole life annuities used were 20.49 for attained ages 18, 19 and 20; 20.37 for 21; . . . 19.56 for 27. The results follow:

Attained Age.	Protection.	Value of Protection.	One Year's Contributions.	Value of Contribution.	Required Accumulation.
18	79500	16842.87	572.40	11728.48	5114.39
19	168500	35698.41	1268.70	25995.66	9702.75
20	256500	54342.09	1973.90	40445.21	13896.88
21	317000	68605.14	2478.10	50478.90	18126.24
22	359000	79396.44	2852.00	57753.00	21643.44
23	325500	73589.04	2600.30	52318.04	21271.00
24	258000	59647.02	2089.60	41771.10	17875.92
25	184000	43517.84	1507.60	29925.86	13591.98
26	121000	29285.63	1005.00	19808.55	9477.08
27	44000	10901.00	369.60	7229.38	3671.62
	2113000	471825.48	16717.20	337454.18	134371.30

The present value of \$2,113,000 of promised death benefits is found to be \$471,825.48. The present value of the future contributions expected to be received on the \$2,113,000 of protection is \$337,454.18. The required accumulation to balance the present values is \$134,371.30. The latter is the reserve liability, and the society should have in possession net assets equal to or greater than this liability to be in a technically solvent position.

Had I taken the tabular rates of contribution, namely:

- For age 18 annually \$10.34 per \$1,000.
- For age 19 annually \$10.34 per \$1,000.
- For age 20 annually \$10.34 per \$1,000.
- For age 21 annually \$10.62 per \$1,000.
- For age 22 annually \$10.92 per \$1,000.

the present value of the future contributions would have been increased and the required reserve accumulation decreased to \$43,566.56, being identical with the amount obtained by the net reserve valuation. The curious can readily test the statement by multiplying the protection by the above rates to obtain the amount of one year's contribution, summing diagonally for attained ages and then multiplying by the whole life annuities as before. The present value of the future expected net contributions will be increased to \$428,258.92, which subtracted from the present value of the protection, \$471,825.48, will give the required accumulation of \$43,566.56.

It will be noticed that the change in contribution rates does not affect the value of the promised benefits. Neither the method of making contributions nor their amount have anything to do with the value of the protection. If learned this would be a valuable lesson to many officials.

Reference is again made to the fact that the two preceding methods are known as "Prospective Valuations."

The past is not considered.

The present position of the Society or company is determined, and then it is undertaken to forecast the future and bring expected future claims and future con-

tributions to present money worth, and, by assuming these present values a part of the present position, to show whether or not the Society or company is *technically* solvent.

The Prospective Valuation is based upon estimates and assumptions.

This declaration applies equally to a "Net Reserve Valuation" and to a valuation of "Promised Benefits" and of "Future Net Contributions."

The third example illustrates a valuation on the "Accumulation Basis."

Instead of using the u and k columns as recommended by Mr. Anderson in his book explanatory of this method of valuation I find it more convenient and expeditious to apply directly the ${}_nU_x$ and ${}_nK_x$ values.

In the chapter on "Definitions" I have given the formulas for the u and k columns and for the ${}_nU_x$ and ${}_nK_x$ accumulation values. In previous chapters I have also given the formulas by which these columns and values may be determined.

A valuation on the "Accumulation Basis" is a "Retrospective Valuation." It is looking backward and reviewing past operation and making an exhibit of the present position as developed from past operation.

Were we to assume that the past mortality experience and past interest earnings and past contributions rates were, for example, according to the National Fraternal Congress Table of Mortality and 4 per cent interest, then a "Retrospective Valuation" would bring out an identical reserve liability as obtained from the "Net Reserve" and "Tabular" Valuations.

However, it will be seen from the following exhibit that the reserve liability will not be the same as produced by the "Tabular" method with the same assumptions of mortality and interest and contribution rates, *where the latter are not the contribution rates derived from the mortality table and interest rate employed in the valuation.*

That is to say, were we to value the annual rates \$10.34, \$10.62 and \$10.92 for entry ages 18, 19, 20, 21 and 22, the reserve liability by the "Accumulation" method and the "Tabular" method would be identical with that of the "Net Reserve" method.

When we value the annual rates \$7.20, 7.80, \$8.00, \$8.20 and \$8.40, the reserve liability under the "Accumulation" method differs from that of the "Tabular" method, and both differ from that of the "Net Reserve" method.

Technically, the "Net Reserve" method ignores the "contributions as in practice actually collected."

Net Reserve Values are prepared in advance of valuation, and these values are computed on the assumption of contribution rates deduced from the standard table of mortality and designated interest rate.

These values are then arbitrarily fixed by law as the measure of technical solvency, and hence are known as "legal reserves."

Therefore, the results of a "Legal Reserve," or "Net Reserve" Valuation are obtained from the determination of the reserve liability, and whether or not the net assets in hand are equal in amount to such reserve liability.

If the requisite net assets are in possession of the society or company the valuation requirements are met and no questions are asked concerning the contribution rates "as in practice actually collected," nor concerning the mortality and interest assumptions employed in the computation of rates of contribution. However, all of these facts are disclosed in the "Gain and Loss Exhibit" required of life companies.

While absolute liberty is left to the Society or company in respect of premiums or contributions, this fact should never be forgotten: *The Required Reserve Accumulation will not be in hand, unless the Contribution Rates, as in practice actually*

collected, have been computed upon the same (or more favorable) Mortality and Interest Assumptions used in the Calculation of the Net Reserve Values prescribed as Legal Reserves.

The values of the ${}_nU_x$ and ${}_nK_x$, on the basis of the National Fraternal Congress Table of Mortality and 4 per cent interest, are not in print, and so far as I am informed, the only manuscript tables are in my office.* These have been computed specially for "retrospective valuations," particularly under provisions of Section 23b.

There is a separate value of U and K for each age of entry and year of duration (or year of issue). The following are the products of the contribution rates by ${}_nU_x$ and then by the protection, and the products of ${}_nK_x$ by the protection.

The results in the first instance exhibit the accumulated past contributions as credits to those carrying the protection in force at date of valuation. And in the second instance, the accumulated past assumed claims chargeable against those carrying the protection at date of valuation.

As with the other valuations, I do not use modified factors for "mid-year" values in obtaining the following results:

ACCUMULATED VALUES OF PAST CONTRIBUTIONS.

Entry Ages.	Years of Entry						Totals.
	1913.	1912.	1911.	1910.	1909.	1908.	
18	598.16	1169.91	1747.58	2271.00	2348.72	2327.67	10463.04
19	753.97	1575.92	2213.02	2652.19	2254.29	3727.65	13177.04
20	735.68	1385.42	2387.84	3042.32	2518.12	3991.90	14061.28
21	676.95	1157.09	1936.51	2715.43	2252.57	3285.35	12023.90
22	605.68	1293.06	1681.18	2443.35	3077.22	2598.29	11698.78
Totals ..	3370.44	6581.40	9966.13	13124.29	12450.92	15930.86	61424.04

ACCUMULATED VALUES OF PAST CLAIMS.

	1913.	1912.	1911.	1910.	1909.	1908.	
18	399.89	783.56	1175.12	1531.97	1590.30	1578.26	7059.10
19	465.28	974.30	1373.62	1651.48	1408.95	2333.08	8206.71
20	442.64	835.11	1445.08	1847.05	1534.50	2436.01	8540.39
21	399.74	685.74	1151.28	1620.60	1349.76	1977.33	7184.45
22	351.90	753.12	983.32	1435.20	1815.68	1540.44	6879.66
Totals ..	2059.45	4031.83	6128.42	8086.30	7699.19	9865.12	37870.31

The total credits in the way of accumulated past contributions is \$61,424.04.

The total charges in the way of accumulated past claims is \$37,870.31.

The net fund in hand to equal the net reserve assumed to be accumulated, \$23,553.73, is the difference between the totals of credits and charges.

As a matter of fact, the actual net fund in hand at date of valuation may be (and usually is) less or larger than this difference between the credits and charges.

i. The past mortality may have been more or less favorable than assumed.

*(Note. Sets of the ${}_nU_x$ and ${}_nK_x$ values can be purchased at a reasonable price.)

2. The interest earnings may have been larger or less than assumed.
3. There may have been (and usually are) forfeitures of accumulation by withdrawing members.
4. There may have been (such things have been known to occur) transfers from unused expense funds to the surplus or reserve accumulation.
5. There may have been (and under past society conditions almost invariably have been) appropriations of contribution excess to relieve members from the full payment of the cost of their protection.
6. There may have been losses from bad investments, or from other causes.
 - (a) If past mortality were more favorable than assumed, the actual to be expected accumulation should be increased. The reverse, if less favorable.
 - (b) If past interest earning were larger than assumed the actual to be expected accumulation should be increased. The reverse, if the earning were less.
 - (c) If there were forfeiture of accumulation by lapse, the accumulation for the persistent survivors should be increased.
 - (d) If there were transfer from expense fund to accumulation the latter should be larger than expected.
 - (e) If there were appropriation of excess of contributions over insurance cost for the use of members who paid less than cost, there would be a decrease in the actual accumulation.
 - (f) If there were loss from bad investments, or otherwise, the actual accumulation would be decreased thereby.

For making a Retrospective Valuation, Mr. Ekern, the Insurance Commissioner of Wisconsin (the author of Section 23b), and Mr. Anderson, the Actuary, have recommended modified k columns for use in fixing the claims and establishing the charges. These modifications are worked out by taking percentages of the q_x columns derived from some standard mortality table. They also recommended an interest rate in computing u which approximates the interest rate actually earned.

These recommendations, if followed, would produce a close agreement between the actual accumulation and that obtained by valuation, *if there were no other accounting than for actual death-rate and interest rate.*

Speaking from a large experience in these matters, I assert that items 3 and 5 (c and e), as stated above, exert more influence (in the majority of instances 5 (e) alone is more potential) than 1 (a) and 2 (b) combined.

The gains from forfeitures by lapse (c) are never very large, nor is the loss from bad investments or otherwise (f) very great, but the appropriations of excess contributions to make good deficiencies in contribution rates (e) reduce to a considerable degree the percentage of the actual to the expected accumulation.

Hence, if the recommendations of Mr. Anderson were followed, always there would be necessary an adjustment after valuation to bring actual and valuation accumulation into agreement.

In these circumstances, my practice is to make the valuation by use of the accumulation factors ${}_nU_x$ and ${}_nK_x$, based on some standard mortality table and rate of interest that most nearly approximate the actual mortality experienced and interest earned.

The accumulation obtained from the valuation will not be identical with the actual accumulation (and neither are they by use of modified k columns). The two are brought into agreement by arbitrary adjustment; or I simply report the facts (my invariable course to the Society), exhibiting a surplus or deficiency as the case may be.

And why not?

In the valuation of any life company in existence has it ever been known that the reserve accumulation shown in the valuation was identical with the actual net accumulation?

It is practically impossible under any method of valuation to bring out results in perfect accord with the facts.

Therefore, I hold that the direct application of the accumulation factors, ${}_nU_x$ and ${}_nK_x$, is preferable in practice to the use of modified valuation columns, for certainly it is more simple and expeditious and the difference between actual and expected accumulation for adjustment is not materially larger than when the Anderson method is employed.

I intend no criticism nor reflection upon Mr. Anderson's method, I merely express a preference for my method, and state the reasons.

Let us come back to the exhibit for the Retrospective Valuation, which has been made by the employment of accumulation factors derived from the National Fraternal Congress Table of Mortality and 4 per cent interest—the same assumptions as in the other two valuations.

It is shown that the expected accumulation is \$23,553.73.

If the actual accumulation is larger, the surplus arises out of gains and savings from sources heretofore indicated.

If the actual accumulation is smaller, the deficiency has been created by one or all of the causes heretofore enumerated.

In either case the results of the Retrospective Valuation clearly indicates the course of past operation, and with its detailed information is singularly suited as a guide for making adjustments in establishing equitable relations between the members, and equally so for making readjustments of contribution rates to assure future solvency.

Without the results of a Retrospective Valuation, it is difficult, if not almost impossible, to make a satisfactory apportionment of accumulated funds amongst members contributing at rates inadequate for the promised benefits.

When a Society has two classes of members with one contributing at rates assumed to be adequate to provide for the benefits promised, and the other contributing at rates admitted to be inadequate, or where such separation is contemplated, the inadequate rate certificates should be valued by the retrospective method. This suggestion is independent of the acceptance of the provisions of Section 23b in respect of apportioning credits and charges with a view to collecting the excess of charges in the way of increased assessments.

In the chapter on "Definitions," where I review valuations, it is stated that a Prospective Valuation becomes a farce and of no effect when there is a great difference between the values of promised benefits and future contributions, and therefore, I have asserted—and now repeat the assertion after further deliberation—that the Retrospective Valuation, in such cases, alone will be educational, or can be turned to practical advantage.

For Fraternal Beneficiary Societies the Retrospective Valuation generally is to be preferred to the Prospective Valuation.

The Net Reserve method of valuation is applicable entirely to very few fraternal societies, because few have all members on adequate rates. Further than this, the results of a Net Reserve Valuation give less information than those of other methods, and are not as effective for educational purposes. And still, further, because of the varied and exceptional contract conditions of fraternal society certificates, the ordinary reserves to be had in book form are not applicable, and hence special tables

must be prepared for individual societies, which is a much more expensive work than preparing single premiums for insurances and annuities for a "Tabular" valuation.

For a valuation on the "Accumulation Basis" the ${}_nU_x$ and ${}_nK_x$ factors can be employed for almost any form of certificate providing for a death benefit only, or death and old age benefit.

Of course, in any case, values must be derived from combined death and disability tables where combined death and disability benefits are promised.

To be more explicit concerning the different results obtained by the different methods of valuation specific comparisons will be made.

First, the "Net Reserve" Valuation, assuming tabular premiums and death rate and 4 per cent interest, shows a required accumulation of \$43,566.56 on the \$2,113,000 whole life protection outstanding at the date of valuation, for entry ages 18, 19, 20, 21 and 22, and issued in the years 1913, 1912, 1911, 1910, 1909 and 1908 as of January 1 of each year, and valued as of December 31, 1913.

The meaning is, that tabular reserves per \$1,000, previously prepared, were employed as multipliers to obtain corresponding reserves on the thousands of protection in force; and according to arbitrary assumptions of mortality and interest the total required accumulation is \$43,566.56, and that if this amount, above all accrued liabilities and debts, is not in hand the Society is, to the degree of deficiency, technically insolvent.

The "Net Reserve" is a Prospective Valuation in effect, because the accumulation of \$43,566.56 is required to supplement future contributions in order to provide for the promised benefits under the \$2,113,000 of protection.

Second. The (so-called) "Tabular" Valuation assumes tabular death rate and 4 per cent interest for the future, but assumes contributions less than the tabular, and shows a required accumulation of \$134,371.30 on the \$2,113,000 of whole life protection.

The meaning is, that the present money worth of \$2,113,000 of whole life protection—the present value of the Benefit Side of the insurance contracts is \$471,825.48, while the present money worth of all future contributions expected to be received—the present value of the Payment Side of the insurance contracts—is \$337,454.18; and if the Society has not the difference, \$134,371.30, between these present values, then it, to the degree of the deficiency, is technically insolvent.

In other words, it is arbitrarily expected that the death rate and interest rate for the future will be on the average identical with the assumed in the valuation, and that the present contribution rates will continue. Under these assumptions there should be in hand, at date of valuation, \$134,371.30 to supplement future contributions in order to provide for the promised benefits under the \$2,113,000 of Whole Life protection.

Third. The valuation on the "Accumulation Basis" assumes tabular death rate and 4 per cent interest in past operation, but assumes contributions in the past less than tabular premiums, and shows that \$23,553.73 should have been accumulated on \$2,113,000 during past operation to the date of the valuation.

The meaning is, that if the past mortality had been according to the National Fraternal Congress Table, and had 4 per cent been earned on invested funds, and the annual net contributions as stated, then the Society should have in hand \$23,553.73.

From the meaning of the three valuations let us determine the value of the information derived from each—and it is to be supposed that the prime object of a valuation is the information to be derived therefrom for some specific purpose on the part of Insurance Commissioners as well as on part of officers and members of societies and companies.

The Net Reserve Valuation gives the least information for practical purposes. The usual method of making the valuation is not that given in the foregoing illustration, but reserve values are entered upon cards and the amounts listed on adding machines, and the final total is reported as the reserve liability. The information given by a Net Reserve Valuation is little more than a mere announcement of an assumed accumulation requirement for expected conditions arbitrarily anticipated.

There is more of material information in the results obtained from the (so-called) "Tabular" Valuation. It exhibits the present worth of the insurance liability and the present worth of the contribution assets, and thus is more readily understood by the average man. It is educational in effect, because anyone can be made to see that by increasing the contribution rate there is a corresponding increase in the present worth of future contributions, because a higher rate must have a greater value. If the assumptions of future death rate and interest rate are conservative, the results of the "Tabular" valuation may be relied upon as a safe index for future operation, and a sure monitor against inadequate rates. The usual form that exhibits the value of protection and contributions by attained ages is more or less misleading. To instance: For attained age 23 there is shown the amount of \$325,500 of protection, being the sum total of \$72,000 issued at 22 in 1912; \$72,000 at 21 in 1911; \$85,000 at 20 in 1910; \$50,500 at 19 in 1909; and \$46,000 at 18 in 1908. Similarly, the present value of \$325,500 of insurance is the total of present values of these amounts issued at different ages and in different years. Likewise, the present value of contributions at attained age 23 is the total of the present value of contributions at different contribution rates. The exhibit of this latter condition is misleading, because for the same attained age some members might be contributing at rates that create deficiencies while others might be contributing at rates yielding a surplus over current insurance cost at the attained age. Notwithstanding this all are thrown together at the one attained age, and their combined contributions valued by taking the annuity at that age for the common multiplier.

The valuation on the "Accumulation Basis" accumulates the past actual contributions made by the members. True, this accumulation is on the assumption of mortality and interest only approximating the actual, nevertheless it tells the tale of past operation in a way that can be generally understood and appreciated. Then it accumulates the past claims to the date of the valuation which are justly and equitably an offset to the accumulated contributions. This is readily understood upon the mere suggestion that past operation consists in collecting money in the way of contributions and paying out money in the way of claims. Therefore, if surviving members at the date of valuation are given credit to the full value of past contributions they should be charged with the full value of their share of past claims. It is then plain that if their accumulated contributions exceed the amount of their accumulated share of past claims they should have a net surplus to their credit. On the other hand, if the accumulated claims exceed the amount of accumulated contributions a deficiency has been created; and then it is not difficult to understand that if all claims from contributions received have been paid to the date of the valuation, that the excess in contributions of some members has been appropriated to make good the deficiencies created by other members. From an examination of the valuation sheet on the "Accumulation Basis" one can place the finger upon the group of members, by ages and years of entry, who have paid more and who have paid less than cost of protection. The present status of each member is disclosed as developed from past operation. We must judge the future by the past, and our judgment is obviously strengthened by having laid before us the present position as brought about by past operation. We

are better equipped to forecast the future *after* studying the results of a Retrospective Valuation, and certainly better informed for formulating a plan of readjustment for future operation.

If contribution rates are adequate to provide for the benefits promised it is immaterial as to the choice of methods for valuation. If net reserves are at hand, the Net Reserve method involves the least work and time.

However, the majority of subscribers to this book are officials of fraternal beneficiary societies, and I am trying to present the case primarily for their benefit. Because of this, I make two more examples. The same amounts of protection and the same assumptions as to mortality and interest, and the same annual contribution rates, \$7.20, \$7.80, \$8.00, \$8.20 and \$8.40 are employed, but the ages of entry will be taken in the first example as 38, 39, 40, 41 and 42, and as 48, 49, 50, 51 and 52. I will repeat the examples given for 18, 19, 20, 21 and 22. The "Tabular" and "Accumulation Basis" methods will be illustrated:

PROSPECTIVE VALUATION.

Attained Age.	Amount of Protection.	Present Value of Protection.	Amount of 1 Assessment.	Present Value of Future Contributions.	Required Accumulation.
18	\$ 79500	\$16842.87	\$ 572.40	\$11728.48	\$ 5114.39
19	168500	35698.41	1268.70	25995.66	9702.75
20	256500	54342.09	1973.90	40445.21	13896.88
21	317000	68605.14	2478.10	50478.90	18126.24
22	359000	79396.44	2852.00	57753.00	21643.44
23	325500	73589.04	2600.30	52318.04	21271.00
24	258000	59647.02	2089.60	41771.10	17875.92
25	184000	43517.84	1507.60	29925.86	13591.98
26	121000	29285.63	1005.00	19808.55	9477.08
27	44000	10901.00	369.60	7229.38	3671.62
	\$2113000	\$471825.48	\$16717.20	\$337454.18	\$134371.30
38	\$ 79500	\$ 25909.05	\$ 572.40	\$ 10034.17	\$ 15874.88
39	168500	56359.88	1268.70	21948.51	34411.37
40	256500	88059.02	1973.90	33694.47	54364.55
41	317000	111710.80	2478.10	41731.20	69979.60
42	359000	129864.66	2852.00	47314.68	82549.98
43	325500	120867.92	2600.30	42514.91	78353.01
44	258000	98339.28	2089.60	33621.66	64717.62
45	184000	71990.00	1507.60	23865.31	48124.69
46	121000	48592.39	1005.00	15637.80	32954.59
47	44000	18136.36	369.60	5647.49	12488.87
	2113000	769829.36	16717.20	276010.20	493819.16
48	\$ 79500	\$ 33632.48	\$ 572.40	\$ 8586.00	\$ 25046.48
49	168500	73157.65	1268.70	18662.58	54495.07
50	256500	114278.45	1973.90	28463.64	85814.81
51	317000	144913.38	2478.10	34965.99	109947.39
52	359000	168360.23	2852.00	39386.12	128974.11
53	325500	156578.52	2600.30	35078.05	121500.47
54	258000	127273.98	2089.60	27520.03	99753.95
55	184000	93065.36	1507.60	19372.66	73692.70
56	121000	62733.66	1005.00	12582.60	50151.06
57	44000	23377.20	369.60	4505.42	18871.78
	\$2113000	\$997370.91	\$16717.20	\$229123.09	\$768247.82

RETROSPECTIVE VALUATION.
Accumulated Contributions.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
18	\$598.16	\$1169.91	\$1747.58	\$2271.00	\$2348.72	\$2327.67	\$10463.04
19	753.97	1575.92	2213.02	2652.19	2254.29	3727.65	13177.04
20	735.68	1385.42	2387.84	3042.32	2518.12	3991.90	14061.28
21	676.95	1157.09	1936.51	2715.43	2252.57	3285.35	12023.90
22	605.68	1293.06	1681.18	2443.35	3077.22	2598.29	11698.78
Totals ..	\$3370.44	\$6581.40	\$9966.13	\$13124.29	\$12450.92	\$15930.86	\$61424.04

Accumulated Claims.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
18	\$ 399.89	\$ 783.56	\$1175.12	\$1531.97	\$1590.30	\$1578.26	\$7059.10
19	465.28	974.30	1373.62	1651.48	1408.95	2333.08	8206.71
20	442.64	835.11	1445.08	1847.05	1534.50	2436.01	8540.39
21	399.74	685.74	1151.28	1620.60	1349.76	1977.33	7184.45
22	351.90	753.12	983.32	1435.20	1815.68	1540.44	6879.66
Totals ..	\$2059.45	\$4031.83	\$6128.42	\$8086.30	\$7699.19	\$9865.12	\$37870.31

Accumulated Contributions.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
38	\$ 601.02	\$1171.01	\$ 1752.91	\$ 2284.20	\$ 2363.90	\$ 2348.21	\$10521.25
39	757.58	1577.39	2219.76	2667.60	2272.80	3765.84	13260.97
40	739.20	1393.20	2402.40	3066.80	2538.80	4038.48	14178.88
41	680.19	1163.58	1948.32	2736.67	2275.01	3327.89	12131.66
42	608.58	1300.32	1690.92	2462.46	3112.70	2635.25	11810.23
Totals ..	\$3386.57	\$6605.50	\$10014.31	\$13217.73	\$12563.21	\$16115.67	\$61902.99

Accumulated Claims.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
38	\$ 535.83	\$1066.28	\$1622.08	\$2148.14	\$2266.89	\$2294.02	\$ 9933.24
39	644.73	1372.14	1965.28	2404.64	2088.68	3531.24	12006.71
40	635.36	1220.67	2149.42	2800.75	2371.05	3846.78	13024.03
41	592.50	1035.54	1773.36	2544.86	2161.44	3229.05	11336.75
42	540.27	1180.08	1570.14	2336.75	3015.68	2610.96	11253.88
Totals ..	\$2948.69	\$5874.71	\$9080.28	\$12235.14	\$11903.74	\$15512.05	\$57554.61

Accumulated Contributions.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
48	\$ 601.48	\$1179.87	\$1769.11	\$2308.82	\$2399.12	\$2390.90	\$10649.30
49	758.59	1590.74	2243.31	2701.15	2308.02	3840.15	13441.96
50	740.61	1399.94	2424.02	3104.68	2584.82	4125.67	14379.74
51	682.00	1170.51	1969.10	2776.60	2318.78	3407.25	12324.24
52	610.67	1309.69	1712.03	2504.39	3177.16	2705.14	12019.08
Totals ..	\$3393.35	\$6650.75	\$10117.57	\$13395.64	\$12787.90	\$16469.11	\$62814.32

Accumulated Claims.

Entry Ages.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
48	\$ 806.13	\$1660.60	\$ 2557.44	\$ 3431.94	\$ 3668.52	\$ 3763.26	\$15887.89
49	1011.95	2182.01	3165.90	3923.88	3453.70	5921.44	19658.88
50	1019.04	1982.88	3536.26	4668.20	4007.30	6599.45	21813.13
51	971.70	1717.32	2979.36	4334.18	3736.32	5670.93	19409.81
52	901.83	2042.64	2693.15	4069.65	5336.32	4697.88	19741.47
Totals ..	\$4710.65	\$9585.45	\$14932.11	\$20427.85	\$20202.16	\$26652.96	\$96511.18

Note the fact of the same amounts of protection and the same amounts for one assessment in the three age-groups of the "Tabular" Valuation, and then observe how the value of protection increases and the value of future contributions decreases with the advance in age.

The value of \$79,500 of protection at age 18 is \$16,842.87, and the value of future contributions \$11,728.48. At age 48 the value of \$79,500 is \$33,632.48, and the future contributions \$8,586. The required accumulation at age 18 is \$5,114.39, and at age 48 is \$25,046.48. For the age-group 18-27 it is \$134,371.30, while for 48-57 it is \$768,247.82.

There can be no better illustration than this of the increase in cost of protection with increase in age.

The striking feature of the Prospective Valuation is the increased differences, with increased attained ages, between the present values of future expected claims and the present values of the future expected contributions.

Remember that in the Prospective Valuation we bring all expected liabilities and assets to the present age. We ignore the results of past operation. We have regard only for anticipated results in an attempt to forecast the future. Observe that the greater the value of expected future claims the smaller the value of the expected future contributions, and that the latter *decrease* with the advance in age.

Now turn to the study of the valuation on the "Accumulation Basis."

The striking feature of this valuation is the *increase* in the value of accumulated contributions with advance in age, notwithstanding the same rate for corresponding ages of each group.

The total for entry age 18 and all years of issue is \$10,463.04; for entry age 38 the total is \$10,521.25; and for age 48 it is \$10,649.30.

For the year 1913 and the groups of ages 18-22, 38-42 and 48-52, the respective totals are \$3,370.44, \$3,386.57 and \$3,393.35.

Why should the present value of *future* contributions *decrease* with the increase in age, while the accumulated value of *past* contributions *increase* with the increase in age?

The answer to this question can be found in previous pages to which reference is directed—especially where I dwell at some length on “Mortuary Accretions” and their potency at advanced ages.

There can be no surprise by the exhibit of increase with age in accumulated claims. Nor in the fact that the accumulated claims exceed the accumulated contributions at the advanced ages.

Note the Summary:

Entry Ages.	Accumulated Contributions.	Accumulated Claims.	Differences
18-22	\$61,424.04	\$37,870.31	\$23,553.73
38-42	61,902.99	57,554.61	4,348.38
48-52	62,814.32	96,511.18	33,696.86

The summary indicates the most important of all the lessons in insurance that may be learned from the study of the valuation by the Accumulation method.

Here is clearly demonstrated the need for extra assessments or the readjustment of rates of contribution which has come to every Society fifteen years in operation.

The accumulated past contributions for the age group 18-22 exceed the accumulated past claims by \$23,553.73.

The accumulated past claims for the age group 48-52 exceed the accumulated past contributions by \$33,696.86.

The excess of contributions and increment on \$2,113,000 of protection at the young ages 18-22 lacks \$10,143.13 of being sufficient to make good the deficiencies in contributions on \$2,113,000 of protection at ages 48-52.

This disclosure by a valuation, which exhibits the present situation as developed through past operation, discovers to any average intellect the cause of failure where an insurance business is run upon the principle of appropriating from the young for the benefit of the old. The ever-increasing demands of the latter eventually overburden the former and drive them away and others cannot be found to take their places.

The Retrospective Valuation, taken alone, gives more valuable information. Taken with the Prospective Valuation complete information is given.

The valuation laws recently enacted allow the option of either method.

Probably this opinion of the privileges granted should be modified by stating that the Commissioners of three States construe the *valuation* provisions of the laws following the “Mobile Bill” to require either the “Net Reserve” or the (so-called) “Tabular” valuation, and as excluding the valuation on the “Accumulation Basis.”

Without stretching to any dangerous degree the power of discretion granted to every Insurance Commissioner, the provisions of the Mobile Bill will allow a valuation on the “Accumulation Basis.” The provision is express that “the valuation may show the net value of the certificates subject to valuation.”

Certainly the difference between the accumulated *past* contributions and accumulated *past* claims is the “net value” of the certificates.

No Commissioner will controvert that statement, but it is contended that “net value” has been known as the “difference between the present value of *future* claims

and the present value of *future* contributions," and so hoary with age is this definition that it would be unpardonable disrespect to accept any other.

The superiority of the accumulation method in respect of information concerning fraternal Society conditions should commend it to every Commissioner of Insurance even to the extent of accepting as "net value" the difference between the present value of *past* contributions and the present value of *past* claims.

The acceptance of a valuation on the "accumulation basis" does not necessarily carry with it an acceptance of all of the provisions of Section 23b of the "New York Conference Bill."

The valuation may be made on the "Accumulation Basis" without following it with an "apportionment" of accumulated funds.

To make an apportionment of the accumulated funds is to make a readjustment of the relations between members.

A valuation followed by readjustment was no doubt contemplated by the author of Section 23b. However, the provisions of the Bill permit a valuation on the "Accumulation Basis" *without* a readjustment.

I am not saying that valuation *and* readjustment is less desirable—as a fact, it is preferable to valuation *without* apportionment and readjustment.

The point is that the merits of a Retrospective Valuation should cause its adoption as the best method for fraternal societies (in their present condition), and without reference to its peculiar adaptability to an apportionment of accumulated funds and the establishing of equitable relations between members in respect of contributing according to insurance risk.

SECTION 23B.

The Mobile Bill, as hereinbefore stated, provides for valuations by the "Net Reserve," or the (so-called) "Tabular" methods. At a conference in New York, December 4, 1912, amendments were agreed to, and the Bill, as amended, is given (in substance) at pages 66-72.

At a second conference in New York, December 15, 1913, additional amendments were agreed to as follows, in respect of Section 23b:

First. That the first paragraph of Section 23b of said conference bill be amended by inserting after the words "to cover his share of the losses" in the third line from the end in the printed copy, the following words, first changing the period to a comma: "and if the credit at the time any benefit becomes payable during the lifetime of the member, including any available funds, does not equal such benefit, the contributions to be made by him or on his behalf shall be increased by the difference."

Second. By striking out the sixth and seventh paragraphs of said bill as printed, and substituting therefor the following:

"A table showing the rates being paid by and the credits to individual members at each age and year of entry, and showing opposite each credit the tabular rate and the tabular reserve on a level rate equivalent to that being paid, according to assumptions for mortality and interest recognized by the laws of this State and adopted by the Society, and, in either case, including any benefit payable at a specified age or on account of old age disability, shall be filed by the Society with each annual report and also be furnished to each member before July 1st of each year."

"In lieu of the aforesaid statement there may be furnished to each member within the same time a statement giving the data aforesaid for such member. No table or statement need be made or furnished when the reserves are maintained on the tabular basis."

The amendments so recommended are for the purpose of making the section more specific and definite, and to prevent misunderstandings which have arisen with regard to the purpose and intent of the section.

The Committee on Fraternal Insurance for the Insurance Commissioners' Convention reported (and the recommendation was adopted, subject to such changes and corrections as might be made by the Committee on Statutory Legislation for the National Fraternal Congress) the following form of valuations under Section 23b:

TABLE OF CREDITS

As of December 31, 191.....

For the.....
(Name of Society.)

for certificates of \$1,000.00 on the..... plan.
Year of Issue.

	1913.		1912.		1911.		Etc.
Age.	Present Rate and Credit.	Required Rate and Reserve.	Present Rate and Credit.	Required Rate and Reserve.	Present Rate and Credit.	Required Rate and Reserve.	Etc.
16
17
18
Etc.

The valuer must state whether or not account has been taken of contributions or reserves made, or held, or required to be made or held for sickness, accident, or other benefits than mentioned in the body of the report.

He must state whether or not the credits and reserves have been calculated to the last anniversary of the certificates, or must specify the time to which they have been calculated.

The Committee added the following explanatory statements and notes:

"Any member may find the figures for his certificate by following down the columns for his year of entry to the horizontal lines for his age at entry.

"The table shows the (monthly) rates being paid by, and the present credits to, members holding certificates on the (whole life plan) at each age and year of entry; and for purposes of comparison shows opposite such rate and credit (the tabular entry age, monthly rate required to be paid and the tabular reserve now required), assuming a death rate equal to the ——— table of mortality and interest at the rate of ——— per cent in order to provide the death benefit (four or five) promised in the contract upon a certificate for \$1,000. The credit of the member is the balance from contributions made by him, or in his behalf, and his share of interest earnings after deducting his cost of insurance for his share of the actual death claims.

"If the credit and contribution made by or on behalf of a member shall together be insufficient to pay his share of the actual death claims for any year, the contribution to be made by him or on his behalf for said year shall be increased by the difference."

Note 1. In the proper case, substitute the word "quarterly" or "annual" for "monthly."

Note 2. In the proper case, substitute for the words "whole life," the words descriptive of the plan covered by this table.

Note 3. The Society may, at its option, substitute for the words included in the parenthesis the following words: "The reserve that should be in hand if the present rate is not to be increased."

Note 4. According to the facts, add "and the benefit payable at age ____."

Note 5. According to the facts, add "and the benefit payable on account of old age disability."

Note 6. Where Note 4 or 5 applies, add to the paragraph above which begins: "If the credit and contribution" the following words, "and if the credit at the time any benefit becomes payable during the lifetime of the member, including any available funds, does not equal such benefit, the contribution to be made by him or on his behalf shall be increased by the difference."

The committee further recommends that the reports to the several insurance departments made by the societies which elect to value under Section 23b contain a similar table to the above, showing for each age and year of issue the number of members, the amount of insurance, the total credits and the total reserves, and that there shall be appended to said table the following:

"The total credits for all certificates outstanding upon this plan as above are \$ _____, and adjusted to December 31, 19____, such credits are \$ _____.

"The total required reserves for all certificates outstanding upon this plan as above are \$ _____, and adjusted to December 31, 19____, such reserves are \$ _____.

It appears that Section 23b offers a fairly satisfactory solution of the problem as to the best method of dealing with—

1. The membership of a society in opposition to the acceptance of theoretically adequate contribution rates, provided existing rates are not too low.

2. The membership of a society on readjusted rates assumed to be adequate but not equal to theoretically adequate contributions.

3. The membership of a society to which rates adequate only for attained ages had been applied as of original ages at entry, or at younger than attained ages at date of re-rating.

4. The membership of a society placed to itself in a designated inadequate rate class.

5. The membership of a society thrown together in one class, with entrants prior to a given date contributing at inadequate rates, and with entrants subsequently to the given date contributing at adequate rates.

Generally speaking, these five groups will cover the character of business to which Section 23b is applicable—and then only when all new members, admitted after the date of its application, are placed upon theoretically adequate contribution rates with required reserve accumulation set aside to maintain their adequacy.

The one exception to this requirement might be in the second case of a readjustment upon rates assumed adequate by officials or members, but lower than the theoretically adequate rates, and where it is desired that a test be made in practical and continued operation as to the adequacy of the assumption. Even in this instance, it would be much better, for all concerned, present and future members alike, to have the new entrants contribute at theoretically adequate rates. The latter never yet have failed to produce income sufficient to provide for promised benefits (assuming wise and honest management), while estimated adequacy time and again has miscarried.

This opinion of the remedy offered by Commissioner Ekern was submitted to a man who is recognized as one that can speak with authority on such matters, and he writes to me as follows:

"A second matter that you have referred to in no uncertain terms, but which I should be glad to see with even a little more emphasis, is that 23b is absolutely useless to a society, unless it puts its new business on adequate tabular rates. In fact, to my mind, a second condition of an institution which adopts the concessions of 23b and does not accompany it with adequate tabular rates as far as new business is concerned is worse than the first; for in the first place it might be innocently guilty of the deception of the public implied in its operation. In the second place, it is enter-

ing willfully upon a course of deceit. I have been much disappointed that Mr. Ekern has not been prepared to adopt this view, but with all the respect I have for him, I cannot feel that he is right in counseling that the issue be not raised at this time. It seems to me that now is the time that no society ought to be allowed to put in force the methods of 23b under the assumption that through the remedy it prescribes it may still continue safely to write new members under old conditions, with the expectation of applying the remedy to them when the time comes. Aside from this, such a course is needless, because if a society desires to write purely current cost business, it can do so under the law on the step-rate plan, and have the consciousness that it is doing what it is doing honestly."

Commissioner Ekern declares that a valuation under Section 23b has the striking advantage over other methods in that the results of a valuation as provided in the section will show 100 per cent or more of solvency—and cannot disclose any technical deficiency, because of offsetting charges and the required increase of contribution or other recourse to provide for the member's share of losses in excess of his credit and current net contribution. To render this statement altogether correct demands a construction that will change certificates to yearly renewable contracts promising death benefit only, or a construction of the provisions of the section which will explain the procedure in the determination of "cost of insurance" and the "charge" to be entered where a member is within one or more years of maturing a promised endowment or other benefit of a character as hereinafter suggested.

It is my opinion that Commissioners have the authority, under discretionary powers, to prescribe the methods of procedure in the valuation of other than death benefits. As the section stands it is not applicable to such cases, and I agree with as Actuary who has expressed himself on this point to the effect that "the added cost involved by these extra benefits must be provided for by accumulation functions determined actuarially." Valuation by the employment of such factors could be accepted by Commissioners through a proper exercise of discretionary powers.

In effect, this has been done by the Commissioners in their action at the recent conference, December 12, 1913.

Very many societies promise to pay the face of certificates by installments in the event of permanent total disability, or on attaining to 70 years of age. Upon the date of any valuation there will be matured obligations under both of these promises, and there will be members in such physical condition or so near the endowment age that claims will mature shortly, and on all such certificates the insurance liability is greater than where the promise is for death benefit only.

Unless the courts decide against the segregation of funds under the provisions of Section 23b, valuation under it can be made to serve the purpose hereinbefore indicated.

The method of valuation best suited for the individual society can be determined only by knowing the individual condition.

Section 23a of the "Mobile and of the New York Conference Bills" provides for the valuation of "Promised Benefits" and of "Future Net Contributions as in practice actually collected," and provides also for an exhibit merely of the "Net Value of Certificates."

Section 23b of the New York Conference Bill provides: "In lieu of the requirements of Sections 23 and 23a any society, *accepting in its laws the provisions of this section*, may value its certificates on a basis, herein designated Accumulation Basis, by crediting each member with the net amount contributed for each year and with interest at approximately the net rate earned, and by charging him with his share

of the losses for each year, herein designated Cost of Insurance, and carrying the balance, if any, to his credit."

The section further provides: "Certificates issued, related or readjusted on a basis providing for adequate rates, with adequate reserves to mature such certificates upon assumptions for mortality and interest recognized by the laws of this State, shall be valued on such basis, herein designated Tabular Basis."

In order to take advantage of the "Accumulation Basis" of valuation each society must "accept the provisions in its laws." This is a condition precedent and must be complied with prior to making the valuation.

It is understood that some, and probably all, of the Commissioners of the eleven States in which the "Mobile Bill" is effective will accept valuations made on the "Accumulation Basis," although there is no specific provision for it in that bill. This acceptance is permissible under the general discretionary power given to the Commissioners.

By whatever method the valuation is made, a society may employ a Table of Mortality based upon its own experience "of at least twenty years and covering not less than one hundred thousand lives, with interest assumption not more than 4 per centum per annum."

A question has been raised as to the intent of the quoted words in reference to "one hundred thousand lives." The original wording in the amendment offered by the Royal Arcanum in the National Fraternal Congress was "one hundred thousand members." I pointed out to the representative of that society that such wording would operate to exclude the Royal Arcanum from the benefit of the proposed amendment to Section 23 of the tentative bill then under consideration. I suggested as a substitute for "members" the words "lives exposed to risk." The learned attorneys who had charge of the bill adopted the suggestion by substituting "lives" for "members," but omitted the words "exposed to risk," which would have made clear the intent of Brother Wiggins in offering the original amendment. However, the use of the word "lives" instead of "members," and the unquestioned purpose of the provision, leaves no doubt that the meaning of the provision is that any society can employ a Table of Mortality based upon its own Experience, *when that experience covers a period of at least twenty years and includes a total of not less than one hundred thousand lives exposed to risk during that period.*

MATERNITY BENEFITS.

Only one American Society has established a scale of contributions for maternity Benefits.

It is very common in Europe for societies to pay a stipulated benefit on the birth of a child.

Concerning this benefit Mr. Alfred W. Watson writes:

Amongst the minor allowances of friendly societies, maternity benefits have almost always been found in village friendly societies of women, and these benefits have recently come more frequently under notice because of the establishment of branches of women members of affiliated orders during the last twenty years. There has been a considerable misunderstanding of the financial incidence of this particular benefit in the establishment of the branches of some of the affiliated orders. An attempt has been made to set up separate funds for maternity benefits on the theory that, if separate funds for sickness and death benefits were required (this necessity was assured on grounds which I have explained previously), a separate fund for the maternity benefit was also needed. But, of course, the societies which attempted to set up such funds failed to observe that while benefits depending on sickness and mortality were increasing risks provided for by a level premium, maternity benefit repre-

sented a decreasing risk with the like form of premium, and that consequently, the reserves, after about 30 years of age, must be negative. Several societies have tried to set up such a fund, and naturally, have found it nearly always in a state of insolvency. I do not suppose that any qualified adviser would undertake to quote a premium for maternity benefit to be paid into a separate fund for that benefit; but the point is worth mentioning, if only to indicate the problems which are submitted to the actuary, with excellent intentions, by friendly society managers who, of necessity, are imperfectly versed in the technical principles involved. The same may be said of the request occasionally advanced, that the actuary will quote a premium payable throughout life for an optional maternity benefit; this, obviously, is an impossible form of contract.

The maternity benefit is very easily valued as a variable annuity, ceasing at about 45 years of age in the case of societies of women, but assuming it to run on to age 55, or later, in the case of societies of men. The only collected experience in this country of maternity benefit claims is that of the Heart of Oaks Society, three recent years' experience of which I was enabled to obtain and analyze some time ago. I am inclined to think that the birth rate of the country generally is rather higher than it is among the members of the Hearts of Oak Society, but having in view the constant decrease in this rate, it is scarcely safe to put forward any positive opinion.

On the point last mentioned it is, perhaps, worth referring to the fact that I have recently had under examination a fairly large experience, obtained from a centralized society's records referring to the years 1876 to 1880, and tabulated by Mr. R. P. Hardy. This society showed at the age of 27, which is a typical age for this purpose, a birth rate of 30 per cent; that is to say, 30 per cent of the entire membership at age 27 had children born to them within a year. In the Hearts of Oak experience, in the three years 1907 to 1909, the corresponding proportion was only 17 per cent. The society giving the 1876-80 experience has been recently through my hands, and I found its experience to be about one-third higher than the Hearts of Oak, which would make the present birth rate in respect of its members about 23 per cent at the age of 27. So far, therefore, as somewhat imperfect statistics show, it would seem that in the case of that society the birth rate has fallen during the last 30 years by about 25 per cent.

BENEFIT FOR MEMBER'S WIFE.

Quoting further from Mr. Watson:

There appears to be scope for consideration with regard to the method employed to value the benefit payable on the death of a member's wife during his lifetime. Hitherto it has been the orthodox custom to value this benefit by the ordinary function A_{xy}^1 the female life (x) being generally taken as two to five years younger than the male life (y). The employment of this function somewhat overestimates the claims, in consequence of ignoring the unmarried condition of a substantial proportion of the membership, and assuming that on the valuation date the society is on the risk for everybody except widowers. The opposite and extremely unreasonable course has been taken by many "valuers" of assuming that the men who on the valuation date were not married, never would be married, and, consequently, of debiting the society with no liability in respect of the wife's death benefit for these members. I think a middle course might be found, and the claims in respect of the wives recorded at each age of the member, in order that a rate of claim in respect of wife's death might be obtained (precisely as one would get out the rate of claim in respect of maternity or sickness) and the benefit be valued on that basis. To test the possibility of adopting this course I have analyzed the Hearts of Oak experience for the three years 1907 to 1909, and have found that the claims for wife's death benefit per thousand members at risk emerge on something like the following scale: 2 at age 26; 3 at age 30; 5 at age 40; 8 at age 50; 14 at age 60, and 25 at age 70. This gives a very good series, and naturally produces a value substantially lower than the text-book factor for the benefit. After full consideration, I am of opinion that this method would supply a legitimate way of valuing this particular benefit in a well established society. It is clear, however, that in the case of any recently established society, the society's own experience should not be used, because, in such cases, there is a tendency to recruit the membership from amongst young and unmarried men; but on the principle the plan seems sound.

THEORY OF THE ...

The first part of the book deals with the general theory of the ...

The second part of the book deals with the special theory of the ...

The third part of the book deals with the applications of the ...

REFERENCES

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he "Benefit Side" and "Payment Side" of the contract. The learned actuaries who have written text-books have not evolved symbols sufficient to express algebraically all of the features of either side to the contract.

It has been the practice of societies to have paramount regard to safety of the principal invested, and it is difficult to impress officials with the necessity of earning 4 per cent or more when they adopt contribution rates calculated upon four per cent interest assumption.

I have commented upon the importance of the expense consideration.

The valuation laws require that the "net" contributions be valued.

Some societies "load" the net premium, or contribution rate, to continue through the period of protection and to replace by monthly payments an amount used in the first year for expenses.

This practice may be considered in the nature of preliminary term insurance and treated similarly in making a valuation.

Or the present value of the loading may be treated as a single premium for the purchase of the cash sum for immediate use, and the amount of this single premium added to the single premium for the valuation of the protection. The loaded contribution rate then may be treated as the "net" rate of contribution. Obviously the present value of the loading to be added to the insurance single premiums will decrease from year to year, being valued by the annuity at the attained age which is employed in the valuation of the contributions.

If the valuation is by "Net Reserves," these must be modified for a valuation where the net premium is loaded for a flat amount for expenses in the first year.

The valuation laws for fraternal societies provide that the protection for the current year need not be valued where the whole or any part of the first year's contributions are used for expenses.

LAPSE ELEMENT IN VALUATION.

Mr. Alfred W. Watson, an authority on Friendly Societies, makes the following comment on the consideration of the lapse element in the valuation. His statements are applicable to the valuations of the certificates of Fraternal Beneficiary Societies. Only the actuary of a Canadian Order has undertaken to introduce the lapse element into the valuation of American Societies.

On general principles it is a custom—and a sound one—to deprecate any use of the secession element in valuing friendly societies. Personally, I would say nothing to weaken the general opinion on this point. My observations now are simply directed to matters that should be taken into consideration before, and in case the actuary does decide to employ the secession element in a particular valuation. Broadly, I would lay down the rule that in small societies the probability of secession should be ignored; in large societies there is more ground for its recognition. But while I would admit in the case of a large society, the use of the secession rate, as giving some abatement of liabilities in a case where there is reason to expect a deficiency, and where the basis in other respects is adequate, I think it would be distinctly undesirable to use a rate of secession in the case of a society, however large, where the expected outcome of the valuation was a distribution of surplus. Not only can it be urged in such a case, that the use of a secession rate represents a present anticipation of possible future profit, but the direct result of that course of action may be to so enlarge the amount of present surplus as to afford the members strong inducement to remain in the society, thus weakening one of the pillars on which the surplus depends. In dealing with societies of recognized soundness, and especially if there is any question of the appropriation of the surplus, my own course has always been to disregard the secession element, except in regard to the large collecting societies which are outside the scope of our syllabus.

The employment of a secession rate for large societies and its disregard in the case of small bodies appears to set up a discrimination in favor of large societies, as regards the leniency of the test of valuation. Scientifically this is not difficult to defend if the true ground for the differentiation be kept in view. This is not that secessions will be fewer relatively in the small societies than they will be in the large societies, but that the uncertainty of estimating them is greater. Secession, being an event dependent upon the action of the human will, is always difficult of measurement; when the actuary comes to deal with very small bodies, such as village friendly societies, he may say, with confidence, that if he could take a thousand societies and pool them he would find probably amongst them as he would find in one large society with precisely the same type of members. But in the practical conditions each society must be regarded separately, and it is the uncertainty of the secession element which debars the actuary from giving effect to it when appraising the position of a small body.

GENERAL COMMENTS.

Fraternal beneficiary societies reserve the right to expel members for certain infractions of the constitution and laws, and for certain offenses and crimes. The cases of expulsion are comparatively few and may be ignored in forecasting future results.

The society is virtually in the position of the life company in respect of voiding or cancelling its contract. It has the right to levy extra assessments, but so long as the member keeps up his contributions the society must abide the contractual conditions.

However, the constitution and laws being part of the contract, in very many cases, it is not an easy matter to reduce the benefits and payments to a working formula.

The policy of a life company contains all of the provisions and conditions of the contract, where the application is incorporated in the policy, as is done almost universally.

One must read the entire constitution and laws of the fraternal beneficiary society to be sure of contract conditions, and in some instances he cannot then be certain of

the "Benefit Side" and "Payment Side" of the contract. The learned actuaries who have written text-books have not evolved symbols sufficient to express algebraically all of the features of either side to the contract.

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Some societies "load" the net premium, or contribution rate, to continue through the period of protection and to replace by monthly payments an amount used in the first year for expenses.

This practice may be considered in the nature of preliminary term insurance and treated similarly in making a valuation.

Or the present value of the loading may be treated as a single premium for the purchase of the cash sum for immediate use, and the amount of this single premium added to the single premium for the valuation of the protection. The loaded contribution rate then may be treated as the "net" rate of contribution. Obviously the present value of the loading to be added to the insurance single premiums will decrease from year to year, being valued by the annuity at the attained age which is employed in the valuation of the contributions.

If the valuation is by "Net Reserves," these must be modified for a valuation where the net premium is loaded for a flat amount for expenses in the first year.

The valuation laws for fraternal societies provide that the protection for the current year need not be valued where the whole or any part of the first year's contributions are used for expenses.

TABLE I.
NATIONAL FRATERNAL CONGRESS TABLE OF MORTALITY.

x Age.	l_x Number Living.	d_x Number Dying.	Q_x Yearly Probability of Dying.	1000 q_x Yearly Death Rate Per 1,000.	1000 $q_x v^x$ Discounted Yearly Rate Per 1,000.	e_x Expecta- tion of Life.	Average Duration of Life.
20	100000	500	.0050000	5.000	4.808	45.6	49.7
21	99500	501	.0050352	5.035	4.841	44.9	48.8
22	98999	502	.0050708	5.071	4.876	44.1	47.9
23	98497	503	.0051068	5.107	4.911	43.3	47.0
24	97994	505	.0051535	5.154	4.956	42.5	46.1
25	97489	507	.0052006	5.201	5.001	41.8	45.2
26	96982	510	.0052587	5.259	5.057	41.0	44.3
27	96472	513	.0053176	5.318	5.113	40.2	43.4
28	95959	517	.0053877	5.388	5.181	39.4	42.5
29	95442	522	.0054693	5.469	5.259	38.6	41.6
30	94920	527	.0055520	5.552	5.338	37.8	40.7
31	94393	533	.0056466	5.647	5.430	37.0	39.8
32	93860	540	.0057532	5.753	5.532	36.2	38.9
33	93320	548	.0058723	5.872	5.646	35.4	38.0
34	92772	557	.0060040	6.004	5.773	34.6	37.1
35	92215	567	.0061487	6.149	5.912	33.9	36.2
36	91648	578	.0063067	6.307	6.064	33.1	35.3
37	91070	591	.0064895	6.490	6.240	32.3	34.4
38	90479	606	.0066977	6.698	6.440	31.5	33.5
39	89873	622	.0069209	6.921	6.655	30.7	32.6
40	89251	640	.0071708	7.171	6.895	29.9	31.7
41	88611	660	.0074483	7.448	7.162	29.1	30.9
42	87951	683	.0077657	7.766	7.467	28.3	30.0
43	87268	708	.0081129	8.113	7.801	27.5	29.1
44	86560	734	.0084797	8.480	8.154	26.8	28.2
45	85826	761	.0088668	8.867	8.526	26.0	27.4
46	85065	790	.0092870	9.287	8.930	25.2	26.5
47	84275	822	.0097538	9.754	9.379	24.4	25.6
48	83453	857	.0102693	10.269	9.874	23.7	24.8
49	82596	894	.0108238	10.824	10.408	22.9	23.9
50	81702	935	.0114440	11.444	11.004	22.2	23.1
51	80767	981	.0121460	12.146	11.679	21.4	22.2
52	79786	1029	.0128970	12.897	12.401	20.7	21.4
53	78757	1083	.0137512	13.751	13.222	19.9	20.6
54	77674	1140	.0146767	14.677	14.112	19.2	19.8
55	76534	1202	.0157054	15.705	15.101	18.5	19.0
56	75332	1270	.0168587	16.859	16.211	17.8	18.2
57	74062	1342	.0181200	18.120	17.423	17.1	17.4
58	72720	1418	.0194994	19.499	18.749	16.4	16.6
59	71302	1501	.0210513	21.051	20.241	15.7	15.8
60	69801	1588	.0227504	22.750	21.875	15.0	15.1
61	68213	1681	.0246434	24.643	23.695	14.4	14.4
62	66532	1778	.0267240	26.724	25.696	13.7	13.6
63	64754	1880	.0290330	29.033	27.916	13.1	12.9
64	62874	1985	.0315711	31.571	30.357	12.4	12.2
65	60889	2094	.0343904	34.390	33.067	11.8	11.6

TABLE I.

NATIONAL FRATERNAL CONGRESS TABLE OF MORTALITY—Continued.

x Age.	l_x Number Living.	d_x Number Dying.	q_x Yearly Probabi- lity of Dying.	1000 q_x Yearly Death Rate Per 1,000.	1000 $q_x v^x$ Discounted Yearly Rate Per 1,000.	e_x Expecta- tion of Life.	Average Duration of Life.
66	58795	2206	.0375202	37.520	36.077	11.2	10.9
67	56589	2318	.0409620	40.962	39.387	10.7	10.3
68	54271	2430	.0447753	44.775	43.053	10.1	9.7
69	51841	2539	.0489767	48.977	47.093	9.5	9.1
70	49302	2645	.0536489	53.649	51.586	9.0	8.5
71	46657	2744	.0588122	58.812	56.550	8.5	7.9
72	43913	2832	.0644912	64.491	62.011	8.0	7.4
73	41081	2909	.0708113	70.811	68.087	7.5	6.9
74	38172	2969	.0777795	77.780	74.788	7.0	6.4
75	35203	3009	.0854757	85.476	82.188	6.6	6.0
76	32194	3026	.0939927	93.993	90.377	6.2	5.5
77	29168	3016	.1034010	103.401	99.424	5.7	5.1
78	26152	2977	.1138345	113.835	109.457	5.3	4.7
79	23175	2905	.1253506	125.351	120.530	5.0	4.3
80	20270	2799	.1380858	138.086	132.775	4.6	4.0
81	17471	2659	.1521951	152.195	146.341	4.3	3.6
82	14812	2485	.1677694	167.769	161.316	3.9	3.3
83	12327	2280	.1849599	184.960	177.846	3.6	3.0
84	10047	2050	.2040410	204.041	196.193	3.3	2.8
85	7997	1800	.2250844	225.084	216.427	3.0	2.5
86	6197	1539	.2483460	248.346	238.794	2.8	2.3
87	4658	1277	.2741520	274.152	263.608	2.5	2.0
88	3381	1023	.3025732	302.573	290.935	2.3	1.8
89	2358	788	.3341815	334.182	321.329	2.1	1.7
90	1570	579	.3687898	368.790	354.606	1.9	1.5
91	991	404	.4076690	407.669	391.989	1.7	1.4
92	587	264	.4497445	449.745	432.447	1.5	1.2
93	323	161	.4984520	498.452	479.281	1.4	1.0
94	162	89	.5493827	549.383	528.253	1.2	.9
95	73	44	.6027397	602.740	579.557	1.1	.8
96	29	19	.6551724	655.172	629.973	1.0	.8
97	10	7	.7000000	700.000	673.077	.8	.7
98	3	3	1.0000000	1000.000	961.538	.5	.5

TABLE II.
FRATERNAL EXPERIENCE—FOUR PER CENT.
Commutation Columns.

x	v^x	$D_x = \frac{1}{v} v^x$	$N_x = \Sigma D_x$	$S_x = \Sigma N_x$	$C_x = \frac{1}{d_x} v^{x+1}$	$M_x = \Sigma C_x$	$R_x = \Sigma M_x$
20	0.456387	45638.694620	935208.44679	16198892.4659	219.416801	9669.13897	312174.1212
21	.438834	43663.943411	889569.75217	15263684.0191	211.399649	9449.72217	302504.9822
22	.421955	41773.161323	845905.80876	14374114.2669	203.674619	9238.32252	293055.2600
23	.405726	39962.826653	804132.64744	13528208.4581	196.231102	9034.64791	283816.9375
24	.390121	38229.563757	764169.82079	12724075.8107	189.433985	8838.41680	274782.2896
25	.375117	36569.761935	725940.25703	11959905.9899	182.869441	8648.98282	265943.8728
26	.360689	34980.363189	689370.49509	11233965.7329	176.876451	8466.11338	257294.8900
27	.346817	33458.088154	654390.13190	10544595.2578	171.073943	8289.23693	248828.7766
28	.333477	32000.164667	620932.04375	9890205.1059	165.776781	8118.16298	240539.5397
29	.320651	30603.612321	588931.87908	9269273.0621	160.942345	7952.38620	232421.3767
30	.308319	29265.607964	558328.26676	8680341.1830	156.234556	7791.44386	224468.9905
31	.296460	27983.773102	529062.65880	8122012.9163	151.935882	7635.20930	216677.5466
32	.285058	26755.538255	501078.88570	7592950.2575	148.010854	7483.27342	209042.3373
33	.274094	25578.468237	474323.34744	7091871.3718	144.426545	7335.26257	201559.0639
34	.263552	24450.254452	448744.87920	6617548.0243	141.152417	7190.83602	194223.8031
35	.253415	23368.707633	424294.62475	6168803.1451	138.160165	7049.68360	187032.9653
36	.243669	22331.751021	400925.91712	5744508.5204	135.423578	6911.52344	179983.2817
37	.234297	21337.413942	378594.16610	5343582.6033	133.143690	6776.09986	173071.7583
38	.225285	20383.600485	357256.75216	4964988.4373	131.272088	6642.95617	166295.6584
39	.216621	19468.343764	336873.15167	4607731.6850	129.555786	6511.68408	159652.7022
40	.208289	18590.005525	317404.80791	4270858.5333	128.177874	6382.12830	153141.0182
41	.200278	17746.827439	298814.80238	3953453.7254	127.099454	6253.95042	146758.8899
42	.192575	16937.157699	281067.97494	3654638.9231	126.469882	6126.85097	140504.9394
43	.185168	16159.258675	264130.81724	3373570.9481	126.056815	6000.38109	134378.0885
44	.178046	15411.691911	247971.55857	3109440.1309	125.659634	5874.32427	128377.7074
45	.171198	14693.274895	232559.86666	2861468.5723	125.271146	5748.66464	122503.3831
46	.164614	14002.877792	217866.59176	2628908.7056	125.043219	5623.39349	116754.7185
47	.158283	13339.262351	203863.71397	2411042.1139	125.104097	5498.35028	111131.3250
48	.152195	12701.109702	190524.45162	2207178.3999	125.414340	5373.24618	105632.9747
49	.146341	12087.191143	177823.34192	2016653.9483	125.797078	5247.83184	100259.7285
50	.140713	11496.502098	165736.15078	1838830.6064	126.506053	5122.03476	95011.8967
51	.135301	10927.822887	154239.64868	1673094.4556	127.624885	4995.52871	89889.8619
52	.130097	10379.897122	143311.82579	1518854.8069	128.720700	4867.90382	84894.3332
53	.125093	9851.949610	132931.92867	1375542.9811	130.265117	4739.18312	80026.4294
54	.120282	9342.763354	123079.97906	1242611.0525	131.847285	4608.91801	75287.2463
55	.115656	8851.579017	113737.21570	1119531.0734	133.671083	4477.07072	70678.3283
56	.111207	8377.462587	104885.63669	1005793.8577	135.801129	4343.39964	66201.2575
57	.106930	7919.451359	96508.17410	900908.2210	137.980857	4207.59851	61857.8579
58	.102817	7476.876219	88588.72274	804400.0469	140.187475	4069.61765	57650.2594
59	.098863	7049.116582	81111.84652	715811.3242	142.685662	3929.43018	53580.6417
60	.095060	6635.311052	74062.72994	634699.4776	145.149920	3786.74452	49651.2116
61	.091404	6234.956860	67427.41889	560636.7427	147.740878	3641.59460	45864.4671
62	.087889	5847.409949	61192.46203	493209.3288	150.255847	3493.85372	42222.8725
63	.084508	5472.253719	55345.05208	432016.8668	152.765095	3343.59787	38729.0187
64	.081258	5109.017328	49872.79836	376671.8147	155.093450	3190.83278	35385.4209
65	.078133	4757.423211	44763.78103	326799.0163	157.317227	3035.73933	32194.5881

TABLE II.
FRATERNAL EXPERIENCE—FOUR PER CENT—Continued.
Commutation Columns.

x	v^x	$D_x = I_x v^x$	$N_x = \Sigma D_x$	$S_x = \Sigma N_x$	$C_x = \frac{C_x}{d_x v^{x+1}}$	$M_x = \Sigma C_x$	$R_x = \Sigma M_x$
66	.075128	4417.128168	40006.35782	282035.2353	159.357231	2878.42210	29158.8488
67	.072238	4087.881392	35589.22965	242028.8775	161.007594	2719.06487	26280.4267
68	.069460	3769.647591	31501.34862	206439.6478	162.295270	2558.05727	23561.3618
69	.066788	3462.365875	27731.70067	174938.2996	163.053059	2395.76200	21003.3045
70	.064219	3166.144898	24269.33480	147206.5989	163.327226	2232.70894	18607.5429
71	.061749	2881.042869	21103.18990	122937.2641	162.923480	2069.38172	16374.8336
72	.059374	2607.310048	18222.14703	101834.0742	161.681184	1906.45824	14305.4519
73	.057091	2345.347708	15614.83698	83611.9272	159.689593	1744.77706	12398.9936
74	.054895	2095.452434	13269.48927	67997.0902	156.714705	1585.08746	10654.2166
75	.052784	1858.143405	11174.03684	54727.6009	152.717358	1428.37276	9069.1291
76	.050754	1633.958993	9315.89343	43553.5641	147.673238	1275.65540	7640.7564
77	.048801	1423.441179	7681.93444	34237.6707	141.524253	1127.98216	6365.1010
78	.046924	1227.169188	6258.49326	26555.7362	134.321344	986.45791	5237.1188
79	.045120	1045.649028	5031.32407	20297.2430	126.031467	852.13656	4250.6609
80	.043384	879.400291	3985.67505	15265.9189	116.762239	726.10510	3398.5243
81	.041716	728.814963	3106.27475	11280.2438	106.655809	609.34286	2672.4192
82	.040111	594.127809	2377.45979	8173.9691	95.842742	502.68705	2063.0764
83	.038569	475.433998	1783.33198	5796.5093	84.554037	406.84431	1560.3893
84	.037085	372.594038	1307.89798	4013.1773	73.100445	322.29027	1153.5450
85	.035659	285.163053	935.30395	2705.2793	61.717074	249.18982	831.2547
86	.034287	212.478170	650.14089	1769.9754	50.738556	187.47275	582.0649
87	.032969	153.567377	437.66272	1119.8345	40.481541	136.73419	394.5922
88	.031701	107.179398	284.09535	682.1718	31.182321	96.25265	257.8580
89	.030481	71.874792	176.91595	398.0764	23.095410	65.07033	161.6053
90	.029309	46.014967	105.04116	221.1605	16.317164	41.97492	96.5350
91	.028182	27.927996	59.02619	116.1193	10.947480	25.65776	54.5601
92	.027098	15.906363	31.09819	57.0931	6.878653	14.71028	28.9023
93	.026056	8.415927	15.19183	25.9949	4.033592	7.83163	14.1920
94	.025053	4.058646	6.77590	10.8031	2.143990	3.79803	6.3604
95	.024090	1.758554	2.71726	4.0272	1.019183	1.65404	2.5624
96	.023163	0.671734	0.95870	1.3099	0.423175	0.63486	.9083
97	.022272	0.222724	0.28697	.3512	0.149910	0.21169	.2735
98	.021416	0.064247	0.06425	.0642	0.061776	0.06178	.0618

TABLE III.
FRATERNAL EXPERIENCE—FOUR PER CENT.

x	$a_x = \frac{N_x}{D_x}$ Life Annuity.	$A_x = \frac{M_x}{D_x}$ Whole Life Sin le Premium.	$P_x = \frac{M_x}{N_x}$ Annual Premium.	$1000 \frac{(M_x - M_{70})}{N_x - N_{70}}$ Term Premium to Age 70.	$\frac{100 N_{70}}{N_x - N_{70}}$ Annuity of \$100, beginning at 70.	$|_{70-x} a_x$ Value of \$1.00 to Age 70.
20	20.4916	211.863	10.34	8.16	2.66	19.960
21	20.3731	216.420	10.62	8.34	2.80	19.817
22	20.2500	221.155	10.92	8.53	2.95	19.669
23	20.1220	226.077 ^b	11.24	8.72	3.11	19.515
24	19.9890	231.193	11.57	8.93	3.28	19.354
25	19.8508	236.507	11.91	9.14	3.46	19.187
26	19.7074	242.025	12.28	9.37	3.65	19.014
27	19.5585	247.750	12.67	9.61	3.85	18.833
28	19.4040	253.691	13.07	9.86	4.07	18.646
29	19.2439	259.851	13.50	10.13	4.30	18.451
30	19.0780	266.232	13.96	10.41	4.54	18.249
31	18.9060	272.844	14.43	10.70	4.81	18.039
32	18.7280	279.691	14.93	11.01	5.09	17.821
33	18.5439	286.775	15.47	11.34	5.39	17.595
34	18.3534	294.101	16.02	11.68	5.71	17.361
35	18.1565	301.672	16.62	12.04	6.07	17.118
36	17.9532	309.493	17.24	12.42	6.44	16.866
37	17.7432	317.569	17.90	12.82	6.85	16.606
38	17.5267	325.897	18.59	13.24	7.29	16.336
39	17.3036	334.476	19.33	13.69	7.76	16.057
40	17.0740	343.310	20.11	14.16	8.28	15.768
41	16.8376	352.398	20.93	14.65	8.84	15.470
42	16.5948	361.740	21.80	15.16	9.45	15.162
43	16.3455	371.328	22.72	15.71	10.12	14.844
44	16.0898	381.160	23.69	16.28	10.85	14.515
45	15.8276	391.245	24.72	16.88	11.65	14.176
46	15.5587	401.588	25.81	17.51	12.54	13.826
47	15.2830	412.193	26.97	18.18	13.51	13.464
48	15.0006	423.053	28.20	18.89	14.60	13.090
49	14.7117	434.165	29.51	19.64	15.81	12.704
50	14.4162	445.530	30.91	20.42	17.16	12.305
51	14.1144	457.138	32.39	21.26	18.67	11.893
52	13.8067	468.974	33.97	22.14	20.39	11.469
53	13.4930	481.040	35.65	23.07	22.33	11.030
54	13.1738	493.314	37.45	24.05	24.56	10.576
55	12.8494	505.793	39.36	25.09	27.13	10.108
56	12.5200	518.462	41.41	26.18		9.623
57	12.1862	531.299	43.60	27.34		9.122
58	11.8484	544.294	45.94	28.56		8.602
59	11.5067	557.436	48.45	29.85		8.064
60	11.1619	570.696	51.13	31.21		7.504
61	10.8144	584.061	54.01	32.64		6.922
62	10.4649	597.505	57.10	34.16		6.315
63	10.1138	611.009	60.41	35.75		5.679
64	9.7617	624.549	63.98	37.42		5.012

TABLE III.
FRATERNAL EXPERIENCE—FOUR PER CENT—Continued.

x	$a_x = \frac{N_x}{D_x}$ Life Annuity.	$A_x = \frac{M_x}{D_x}$ Whole Life Single Premium.	$P_x = \frac{M_x}{N_x}$ Annual Premium.	$\frac{1000(M_x - M_{70})}{N_x - N_{70}}$ Term Premium to Age 70.	$\frac{100 N_{70}}{N_x - N_{70}}$ Annuity of \$100, beginning at 70.	$|_{70-x}a_x$ Value of \$1.00 to Age 70.
65	9.4092	638.106	67.82	39.18		4.308
66	9.0571	651.650	71.95	41.03		3.563
67	8.7060	665.153	76.40	42.96		2.769
68	8.3566	678.593	81.21	44.99		1.919
69	8.0095	691.944	86.39	47.09		1.000
70	7.6653	705.182	92.00			
71	7.3248	718.275	98.06			
72	6.9889	731.197	104.62			
73	6.6578	743.931	111.74			
74	6.3325	756.442	119.45			
75	6.0135	768.710	127.83			
76	5.7014	780.715	136.93			
77	5.3967	792.433	146.83			
78	5.0999	803.848	157.62			
79	4.8117	814.936	169.37			
80	4.5323	825.682	182.18			
81	4.2621	836.074	196.16			
82	4.0016	846.093	211.44			
83	3.7510	855.733	228.13			
84	3.5102	864.990	246.42			
85	3.2799	873.850	266.43			
86	3.0598	882.315	288.36			
87	2.8500	890.386	312.42			
88	2.6507	898.052	338.80			
89	2.4614	905.329	367.81			
90	2.2828	912.202	399.60			
91	2.1135	918.711	434.69			
92	1.9551	924.805	473.02			
93	1.8051	930.572	515.52			
94	1.6695	935.789	560.51			
95	1.5452	940.571	608.71			
96	1.4272	945.107	662.21			
97	1.2885	950.444	737.64			
98	1.0000	961.538	961.54			

TABLE IV.
FRATERNAL EXPERIENCE—FOUR PER CENT.

x	$\frac{1000 M_x}{N_x - N_{x+20}}$	$\frac{1000 M_x}{N_x - N_{x+10}}$	$\frac{M_x - M_{x+20}}{N_x - N_{x+20}}$	$\frac{M_x - M_{x+10}}{N_x - N_{x+10}}$	$\frac{M_x - M_{x+5}}{N_x - N_{x+5}}$
Age.	20 Payment Life.	10 Payment Life.	20 Year Term Premium.	10 Year Term Premium.	5 Year Term Premium.
20	15.65	25.66	5.32	4.98	4.97
21	16.00	26.21	5.41	5.03	5.01
22	16.36	26.79	5.51	5.09	5.06
23	16.73	27.39	5.62	5.15	5.11
24	17.12	28.02	5.74	5.22	5.16
25	17.53	28.67	5.88	5.30	5.22
26	17.96	29.35	6.03	5.39	5.29
27	18.40	30.06	6.19	5.49	5.36
28	18.86	30.79	6.38	5.59	5.45
29	19.34	31.55	6.58	5.72	5.54
30	19.85	32.34	6.80	5.85	5.65
31	20.37	33.16	7.04	6.00	5.76
32	20.92	34.01	7.31	6.17	5.89
33	21.49	34.90	7.60	6.35	6.04
34	22.08	35.82	7.93	6.56	6.20
35	22.70	36.77	8.28	6.79	6.38
36	23.35	37.76	8.67	7.04	6.58
37	24.02	38.78	9.11	7.31	6.80
38	24.73	39.84	9.58	7.62	7.05
39	25.46	40.94	10.10	7.95	7.32
40	26.23	42.08	10.67	8.31	7.63
41	27.03	43.26	11.29	8.70	7.96
42	27.87	44.48	11.98	9.14	8.32
43	28.74	45.74	12.72	9.61	8.71
44	29.65	47.04	13.55	10.13	9.13
45	30.61	48.38	14.45	10.70	9.59
46	31.62	49.77	15.43	11.33	10.09
47	32.67	51.22	16.52	12.02	10.65
48	33.79	52.71	17.70	12.79	11.27
49	34.96	54.26	19.00	13.63	11.95
50	36.21	55.87	20.42	14.57	12.70
51	37.52	57.54	21.98	15.60	13.53
52	38.92	59.28	23.67	16.73	14.46
53	40.40	61.08	25.52	17.99	15.48
54	41.97	62.96	27.54	19.37	16.61
55	43.65	64.91	29.73	20.90	17.86
56	45.45	66.95	32.10	22.58	19.24
57	47.37	69.07	34.67	24.43	20.77
58	49.43	71.29	37.45	26.48	22.46
59	51.65	73.61	40.45	28.73	24.34
60	54.04	76.05	43.68	31.21	26.41
61	56.77	78.61	47.30	33.93	28.71
62	59.41	81.31	50.86	36.94	31.25
63	62.43	84.15	54.83	40.24	34.07
64	65.74	87.17	59.07	43.87	37.19
65	69.27	90.38	63.59	47.85	40.64
66	73.26	93.79	68.50	52.22	42.60
67	77.35	97.43	73.46	57.01	44.64
68	81.95	101.34	78.86	62.26	46.79
69	86.96	105.54	84.60	68.00	49.03

TABLE V.

MODIFIED COMMUTATION COLUMNS FOR MONTHLY PREMIUMS.

National Fraternal Congress Table of Mortality and 4 per cent interest.

Age	N_x^{12}	$\log. N_x^{12}$	M_x^{12}	$\log. M_x^{12}$	Age	N_x^{12}	$\log. N_x^{12}$	M_x^{12}	$\log. M_x^{12}$
20	914228	5.961055	9846.39	3.99328	60	70996.2	.851235	3856.17	.58616
21	869496	.939268	9622.97	.98331	61	64545.4	.809865	3708.36	.56919
22	826700	.917348	9407.69	.97348	62	58489.1	.767075	3557.91	.55119
23	785758	.895289	9200.28	.96380	63	52814.6	.722754	3404.90	.53210
24	746591	.873083	9000.47	.95427	64	47509.8	.676783	3249.33	.51179
25	709123	.850722	8807.55	.94486	65	42563.0	.629032	3091.40	.49016
26	673283	.828198	8621.32	.93557	66	37962.6	.579356	2931.20	.46705
27	639002	.805502	8441.20	.92640	67	33697.4	.527596	2768.91	.44231
28	606213	.782625	8266.98	.91735	68	29756.5	.473582	2604.96	.41581
29	574854	.759558	8098.17	.90839	69	26128.8	.417120	2439.69	.38734
30	544865	.736289	7934.29	.89951	70	22803.3	.357998	2273.64	.35671
31	516188	.712808	7775.19	.89071	71	19768.9	.295982	2107.32	.32373
32	488768	.689103	7620.47	.88198	72	17014.4	.230817	1941.41	.28812
33	462553	.665161	7469.75	.87331	73	14528.2	.162212	1776.77	.24964
34	437493	.640971	7322.66	.86467	74	12298.5	.089852	1614.15	.20796
35	413539	.616517	7178.93	.85606	75	10312.9	.013381	1454.56	.16273
36	390646	.591783	7038.24	.84746	76	8558.49	3.932397	1299.04	.11361
37	368771	.566757	6900.32	.83887	77	7022.00	.846461	1148.66	.06024
38	347872	.541419	6764.74	.83025	78	5689.46	.755071	1004.54	.00195
39	327909	.515753	6631.06	.82159	79	4546.38	.657666	867.761	2.93840
40	308844	.489739	6499.14	.81285	80	3577.77	.553612	739.416	.86889
41	290641	.463357	6368.60	.80404	81	2768.17	.442193	620.513	.79275
42	273266	.436586	6239.19	.79513	82	2101.80	.322591	511.903	.70919
43	256686	.409402	6110.39	.78607	83	1562.71	.193878	414.303	.61731
44	240870	.381783	5982.02	.77685	84	1134.98	.054988	328.199	.51614
45	225788	.353701	5854.06	.76746	85	802.943	2.904685	253.758	.40442
46	211412	.325130	5726.48	.75789	86	551.505	.741549	190.910	.28083
47	197714	.296037	5599.16	.74813	87	366.366	.563915	139.241	.14377
48	184668	.266302	5471.76	.73813	88	234.330	.369828	98.0174	1.99130
49	172249	.236157	5344.04	.72787	89	143.539	.156971	66.2633	.82127
50	160433	.205294	5215.94	.71733	90	83.671	1.922575	42.7445	.63088
51	149198	.173763	5087.11	.70647	91	46.055	.663277	26.1282	.41711
52	138522	.141519	4957.15	.69523	92	23.710	.374932	14.9800	.17551
53	128385	.108514	4826.06	.68360	93	11.282	.052386	7.97520	0.90174
54	118767	.074696	4693.42	.67149	94	4.890	0.689309	3.8677	.58745
55	109650	.040009	4559.15	.65889	95	1.900	.278754	1.6844	.22645
56	101017	.004394	4423.03	.64572	96	.646	1.810233	.6465	1.81057
57	92850.3	4.967783	4284.75	.63193	97	.184	.264818	.2156	.33365
58	85134.6	.930106	4144.23	.61744	98	.034	2.531479	.0629	2.79865
59	77854.7	.891285	4001.47	.60222					

TABLE V*.
 ANNUITIES, SINGLE PREMIUMS, AND ANNUAL PREMIUMS.
 MOMENTLY BASIS.

National Fraternal Congress Table of Mortality and 4 per cent interest.

Age	\bar{a}_x	\bar{A}_x	\bar{P}_x	Age	\bar{a}_x	\bar{A}_x	\bar{P}_x
20	19.9879	216.06	10.81	60	10.6568	582.03	54.62
21	19.8694	220.71	11.11	61	10.3091	595.67	57.78
22	19.7463	225.54	11.42	62	9.9595	609.38	61.19
23	19.6183	230.56	11.75	63	9.6082	623.16	64.86
24	19.4853	235.77	12.10	64	9.2559	636.98	68.82
25	19.3471	241.19	12.47	65	8.9031	650.81	73.10
26	19.2037	246.82	12.85	66	8.5508	664.63	77.73
27	19.0548	252.66	13.26	67	8.1994	678.41	82.74
28	18.9003	258.72	13.69	68	7.8497	692.13	88.17
29	18.7402	265.00	14.14	69	7.5022	705.76	94.07
30	18.5743	271.50	14.62	70	7.1576	719.27	100.49
31	18.4023	278.25	15.12	71	6.8167	732.64	107.48
32	18.2243	285.23	15.65	72	6.4803	745.84	115.09
33	18.0402	292.45	16.21	73	6.1487	758.84	123.41
34	17.8496	299.93	16.80	74	5.8228	771.63	132.52
35	17.6527	307.65	17.43	75	5.5031	784.16	142.49
36	17.4494	315.62	18.09	76	5.1903	796.43	153.45
37	17.2394	323.86	18.79	77	4.8848	808.41	165.50
38	17.0229	332.35	19.52	78	4.5871	820.09	178.78
39	16.7998	341.10	20.30	79	4.2978	831.44	193.46
40	16.5701	350.11	21.13	80	4.0173	842.44	209.70
41	16.3337	359.38	22.00	81	3.7458	853.09	227.75
42	16.0909	368.90	22.93	82	3.4838	863.36	247.82
43	15.8416	378.68	23.90	83	3.2316	873.25	270.22
44	15.5858	388.71	24.94	84	2.9889	882.77	295.35
45	15.3236	399.00	26.04	85	2.7565	891.89	323.56
46	15.0547	409.54	27.20	86	2.5341	900.61	
47	14.7789	420.36	28.44	87	2.3215	908.95	
48	14.4965	431.44	29.76	88	2.1191	916.89	
49	14.2076	442.77	31.16	89	1.9263	924.45	
50	13.9120	454.36	32.66	90	1.7435	931.62	
51	13.6101	466.20	34.25	91	1.5694	938.45	
52	13.3024	478.27	35.95	92	1.4053	944.88	
53	12.9886	490.58	37.77	93	1.2485	951.03	
54	12.6693	503.10	39.71	94	1.1044	956.68	
55	12.3449	515.82	41.78	95	.9705	961.94	
56	12.0154	528.75	44.01	96	.8413	967.00	
57	11.6815	541.84	46.38	97	.6915	972.88	
58	11.3436	555.10	48.94	98	.3800	985.10	
59	11.0017	568.51	51.67				

TABLE VI.
FRATERNAL EXPERIENCE—THREE AND ONE-HALF PER CENT.
Commutation Columns.

x	$D_x = I_x v^x$	$N_x = \Sigma D_x$	$\dot{S}_x = \Sigma N_x$	$C_x = \frac{C_x}{d_x v^{x+1}}$	$M_x = \Sigma C_x$	$R_x = \Sigma M_x$
20	50256.6	1116620	20395400	242.786	12496.5	426927
21	48314.3	1066360	19278800	235.044	12253.7	414430
22	46445.4	1018050	18212400	227.550	12018.7	402176
23	44647.3	971606	17194300	220.293	11791.2	390157
24	42917.2	926959	16222700	213.689	11570.9	378366
25	41252.2	884042	15295700	207.281	11357.2	366795
26	39649.9	842790	14411700	201.456	11149.9	355438
27	38107.6	803140	13568900	195.788	10948.4	344288
28	36623.1	765032	12765800	190.643	10752.6	333340
29	35194.0	728409	12000800	185.978	10562.0	322587
30	33818.0	693215	11272400	181.410	10376.0	312025
31	32492.9	659397	10579200	177.270	10194.6	301649
32	31216.9	626904	9919750	173.525	10017.3	291454
33	29987.7	595687	9292850	170.141	9843.74	281437
34	28803.5	565699	8697160	167.087	9673.60	271593
35	27662.4	536895	8131460	164.335	9506.51	261919
36	26562.6	509233	7594560	161.858	9342.18	252412
37	25502.5	482670	7085330	159.902	9180.32	243070
38	24480.2	457168	6602660	158.416	9020.42	233890
39	23493.9	432688	6145490	157.100	8862.00	224870
40	22542.3	409194	5712800	156.180	8704.90	216008
41	21623.9	386652	5303610	155.614	8548.72	207303
42	20737.0	365028	4916960	155.591	8393.11	198754
43	19880.2	344291	4551930	155.833	8237.51	190361
44	19052.1	324411	4207640	156.092	8081.69	182123
45	18251.7	305359	3883230	156.361	7925.60	174041
46	17478.1	287107	3577870	156.831	7769.24	166115
47	16730.3	269629	3290760	157.665	7612.41	158346
48	16006.8	252899	3021130	158.820	7454.74	150734
49	15306.7	236892	2768230	160.074	7295.92	143279
50	14629.1	221585	2531340	161.754	7135.85	135983
51	13972.6	206956	2309760	163.972	6974.10	128847
52	13336.1	192983	2102800	166.179	6810.13	121873
53	12718.9	179647	1909820	168.985	6643.95	115063
54	12119.8	166928	1730170	171.864	6474.96	108419
55	11538.1	154808	1563240	175.083	6303.10	101944
56	10972.9	143270	1408430	178.733	6128.02	95641.2
57	10423.1	132297	1265160	182.479	5949.29	89513.2
58	9888.16	121874	1132860	186.292	5766.81	83563.9
59	9367.46	111986	1010990	190.529	5580.52	77797.1
60	8860.14	102619	899004	194.755	5389.99	72216.6
61	8365.79	93758.5	796385	199.190	5195.23	66826.6
62	7883.69	85392.7	702626	203.559	4996.04	61631.4
63	7413.54	77509.0	617233	207.958	4792.48	56635.4
64	6955.89	70095.5	539724	212.148	4584.52	51842.9

TABLE VI.
FRATERNAL EXPERIENCE—THREE AND ONE-HALF PER CENT—Continued.
Commutation Columns.

x	$D_x = l_x v^x$	$N_x = \Sigma D_x$	$S_x = \Sigma N_x$	$C_x = \frac{C_x}{d_x v^{x+1}}$	$M_x = \Sigma C_x$	$R_x = \Sigma M_x$
65	6507.54	63139.6	469629	216.229	4372.37	47258.4
66	6071.25	56632.1	406489	220.091	4156.14	42886.0
67	5645.86	50560.9	349857	223.444	3936.05	38729.9
68	5231.48	44915.0	299296	226.319	3712.61	34793.8
69	4828.26	39683.5	254381	228.475	3486.29	31081.2
70	4436.52	34855.2	214697	229.965	3257.82	27594.9
71	4056.51	30418.7	179842	230.504	3027.85	24337.1
72	3688.83	26362.2	149423	229.851	2797.35	21309.3
73	3334.23	22673.4	123061	228.117	2567.50	18511.9
74	2993.37	19339.2	100388	224.949	2339.38	15944.4
75	2667.20	16345.8	81048.4	220.270	2114.43	13605.0
76	2356.72	13678.6	64702.6	214.024	1894.16	11490.6
77	2063.00	11321.9	51024.0	206.103	1680.14	9596.43
78	1787.14	9258.89	39702.1	196.558	1474.04	7916.29
79	1530.15	7471.75	30443.2	185.318	1277.48	6442.25
80	1293.08	5941.60	22971.4	172.518	1092.16	5164.77
81	1076.84	4648.52	17029.8	158.347	919.640	4072.61
82	882.076	3571.68	12381.3	142.981	761.293	3152.97
83	709.266	2689.60	8809.60	126.749	618.312	2391.68
84	558.532	1980.33	6120.00	110.109	491.563	1773.37
85	429.535	1421.80	4139.67	93.4121	381.454	1281.81
86	321.597	992.266	2717.87	77.1665	288.042	900.356
87	233.555	670.669	1725.60	61.8643	210.875	612.314
88	163.793	437.114	1054.93	47.8834	149.011	401.439
89	110.371	273.321	617.811	35.6365	101.128	252.428
90	71.0020	162.950	344.490	25.2992	65.4913	151.300
91	43.3015	91.9475	181.540	17.0557	40.1921	85.808
92	24.7815	48.6460	89.592	10.7684	23.1364	45.616
93	13.1750	23.8645	40.946	6.34501	12.3680	22.480
94	6.38444	10.6895	17.082	3.38888	6.0230	10.112
95	2.77965	4.3050	6.392	1.61875	2.6341	4.089
96	1.06690	1.5254	2.087	0.67537	1.0153	1.455
97	0.35546	0.4585	0.562	0.24041	0.3400	0.440
98	0.10303	0.1030	0.103	0.09955	0.0995	0.100

TABLE VII.
FRATERNAL EXPERIENCE—THREE PER CENT.
Commutation Columns.

x	$D_x = l_x v^x$	$N_x = \Sigma D_x$	$S_x = \Sigma N_x$	$C_x = \frac{C_x}{d_x v^{x+1}}$	$M_x = \Sigma C_x$	$R_x = \Sigma M_x$
20	55367.6	1340690	25841300	268.774	16318.2	588033
21	53486.2	1285330	24500600	261.467	16049.4	571715
22	51666.9	1231840	23215300	254.359	15788.0	555666
23	49907.6	1180170	21983500	247.442	15533.6	539878
24	48206.7	1130270	20803300	241.190	15286.2	524344
25	46561.3	1082060	19673000	235.092	15045.0	509058
26	44970.0	1035500	18590900	229.596	14809.9	494013
27	43430.6	990527	17555400	224.220	14580.3	479203
28	41941.4	947097	16564900	219.387	14356.1	464623
29	40500.4	905155	15617800	215.057	14136.7	450267
30	39105.8	864655	14712700	210.793	13921.6	436130
31	37756.0	825549	13848000	206.983	13710.8	422208
32	36449.3	787793	13022500	203.594	13503.9	408497
33	35184.2	751344	12234700	200.593	13300.3	394993
34	33958.7	716160	11483400	197.948	13099.7	381693
35	32771.7	682201	10767200	195.633	12901.7	368593
36	31621.5	649429	10085000	193.620	12706.1	355691
37	30506.9	617808	9435580	192.208	12512.5	342985
38	29426.2	587301	8817770	191.347	12320.3	330473
39	28377.7	557875	8230470	190.678	12128.9	318153
40	27360.5	529497	7672600	190.482	11938.2	306024
41	26373.2	502136	7143100	190.713	11747.7	294086
42	25414.3	475763	6640960	191.611	11557.0	282338
43	24482.4	450349	6165200	192.839	11365.4	270781
44	23576.5	425867	5714850	194.097	11172.6	259416
45	22695.7	402290	5288980	195.376	10978.5	248243
46	21839.2	379594	4886690	196.914	10783.1	237264
47	21006.2	357755	4507100	198.923	10586.2	226481
48	20195.5	336749	4149340	201.353	10387.3	215895
49	19406.0	316553	3812590	203.928	10185.9	205508
50	18636.8	297147	3496040	207.068	9981.99	195322
51	17886.9	278511	3198890	210.927	9774.93	185340
52	17155.0	260624	2920380	214.804	9564.00	175565
53	16440.6	243469	2659760	219.491	9349.20	166001
54	15742.2	227028	2416290	224.314	9129.70	156652
55	15059.4	211286	2189260	229.625	8905.39	147522
56	14391.1	196227	1977970	235.549	8675.77	138617
57	13736.4	181835	1781740	241.654	8440.22	129941
58	13094.7	168099	1599910	247.902	8198.56	121501
59	12465.4	155004	1431810	254.770	7950.66	113302
60	11847.5	142539	1276810	261.685	7695.89	105351
61	11240.8	130691	1134270	268.943	7434.20	97655.0
62	10644.4	119451	1003580	276.177	7165.26	90220.8
63	10058.2	108806	884133	283.515	6889.08	83055.5
64	9481.74	98748.0	775327	290.630	6605.57	76166.4

TABLE VII.
FRATERNAL EXPERIENCE—THREE PER CENT—Continued.
Commutation Columns.

x	$D_x = l_x v^x$	$N_x = \sum D_x$	$S_x = \sum N_x$	$C_x = \frac{C_x}{d_x v^{x+1}}$	$M_x = \sum C_x$	$R_x = \sum M_x$
65	8914.96	89266.2	676579	297.659	6314.94	69560.8
66	8357.63	80351.3	587313	304.447	6017.28	63245.9
67	7809.77	71993.6	506962	310.586	5712.83	57228.6
68	7271.72	64183.9	434968	316.110	5402.25	51515.8
69	6743.21	56912.1	370784	320.670	5086.14	46113.6
70	6226.71	50168.9	313872	324.327	4765.47	41027.5
71	5721.03	43942.2	263703	326.666	4441.14	36262.0
72	5227.28	38221.2	219761	327.323	4114.47	31820.9
73	4748.14	32993.9	181540	326.430	3787.15	27706.4
74	4283.42	28245.8	148546	323.458	3460.72	23919.2
75	3835.20	23962.4	120300	318.268	3137.26	20458.5
76	3405.22	20127.2	96337.3	310.744	2819.00	17321.2
77	2995.29	16721.9	76210.1	300.696	2508.25	14502.2
78	2607.36	13726.6	59488.2	288.163	2207.56	11994.0
79	2243.26	11119.3	45761.6	273.003	1919.39	9786.42
80	1904.92	8876.02	34642.3	255.381	1646.39	7867.03
81	1594.05	6971.10	25766.3	235.540	1391.01	6220.64
82	1312.08	5377.05	18795.2	213.715	1155.47	4829.63
83	1060.15	4064.97	13418.2	190.374	941.754	3674.16
84	838.900	3004.82	9353.22	166.184	751.380	2732.41
85	648.280	2165.92	6348.40	141.668	585.196	1981.03
86	487.729	1517.64	4182.48	117.598	443.528	1395.83
87	355.926	1029.91	2664.84	94.7360	325.930	952.301
88	250.824	673.989	1634.93	73.6822	231.194	626.371
89	169.836	423.165	960.939	55.1031	157.511	395.177
90	109.787	253.329	537.774	39.3090	102.408	237.666
91	67.2800	143.542	284.445	26.6291	63.0992	135.258
92	38.6913	76.2623	140.903	16.8944	36.4701	72.1584
93	20.6700	37.5710	64.6402	10.0029	19.5757	35.6883
94	10.0651	16.9010	27.0692	5.36851	9.5728	16.1126
95	4.40339	6.8359	10.1682	2.57680	4.2043	6.5398
96	1.69834	2.4325	3.3323	1.08030	1.6275	2.3355
97	0.56858	0.7342	0.8998	0.38641	0.5472	0.7080
98	0.16561	0.1656	0.1656	0.16078	0.1608	0.1608

TABLE VIII.
FRATERNAL EXPERIENCE.

Values of Life Annuity Due of \$1 and of Single and Level Premiums for \$1,000
Life Insurance.

x	<i>3½ Per Cent Basis.</i>			<i>3 Per Cent Basis.</i>		
	$a_x = \frac{N_x}{D_x}$	$A_x = \frac{M_x}{D_x}$	$P_x = \frac{M_x}{N_x}$	$a_x = \frac{N_x}{D_x}$	$A_x = \frac{M_x}{D_x}$	$P_x = \frac{M_x}{N_x}$
20	22.218	248.65	11.19	24.214	294.72	12.17
21	22.071	253.62	11.49	24.031	300.07	12.49
22	21.919	258.77	11.81	23.842	305.57	12.82
23	21.762	264.10	12.14	23.647	311.25	13.16
24	21.599	269.61	12.48	23.446	317.10	13.52
25	21.430	275.31	12.85	23.239	323.12	13.90
26	21.256	281.21	13.23	23.026	329.33	14.30
27	21.076	287.30	13.63	22.807	335.72	14.72
28	20.889	293.60	14.06	22.581	342.29	15.16
29	20.697	300.11	14.50	22.348	349.03	15.62
30	20.498	306.82	14.97	22.110	356.00	16.10
31	20.293	313.75	15.46	21.865	363.14	16.61
32	20.082	320.89	15.98	21.613	370.48	17.14
33	19.864	328.26	16.53	21.355	378.02	17.70
34	19.640	335.85	17.10	21.089	385.75	18.29
35	19.409	343.66	17.71	20.817	393.69	18.91
36	19.171	351.70	18.35	20.538	401.82	19.56
37	18.926	359.98	19.02	20.251	410.15	20.25
38	18.675	368.48	19.73	19.958	418.68	20.97
39	18.417	377.20	20.48	19.659	427.41	21.74
40	18.152	386.16	21.27	19.353	436.33	22.55
41	17.881	395.34	22.11	19.040	445.44	23.40
42	17.603	404.74	22.99	18.720	454.74	24.29
43	17.318	414.36	23.93	18.395	464.23	25.24
44	17.028	424.19	24.91	18.063	473.89	26.23
45	16.730	434.24	25.96	17.725	483.73	27.29
46	16.427	444.51	27.06	17.381	493.75	28.41
47	16.116	455.01	28.23	17.031	503.95	29.59
48	15.799	465.72	29.48	16.674	514.34	30.85
49	15.476	476.65	30.80	16.312	524.89	32.18
50	15.147	487.79	32.20	15.944	535.61	33.59
51	14.812	499.13	33.70	15.571	546.48	35.10
52	14.471	510.65	35.29	15.192	557.50	36.70
53	14.124	522.37	36.98	14.809	568.67	38.40
54	13.773	534.24	38.79	14.422	579.95	40.21
55	13.417	546.28	40.72	14.030	591.35	42.15
56	13.057	558.47	42.77	13.635	602.85	44.21
57	12.693	570.78	44.97	13.238	614.44	46.42
58	12.325	583.20	47.32	12.837	626.10	48.77
59	11.955	595.73	49.83	12.435	637.82	51.29
60	11.582	608.34	52.52	12.031	649.58	53.99
61	11.207	621.01	55.41	11.627	661.36	56.88
62	10.832	633.72	58.51	11.222	673.14	59.98
63	10.455	646.45	61.83	10.818	684.92	63.31
64	10.079	659.18	65.41	10.415	696.66	66.89
65	9.703	671.89	69.25	10.013	708.35	70.74
66	9.328	684.56	73.39	9.614	719.97	74.89
67	8.955	697.16	77.85	9.219	731.50	79.35
68	8.586	709.67	82.66	8.827	742.91	84.17
69	8.219	722.06	87.85	8.439	754.19	89.37
70	7.856	734.32	93.47	8.057	765.33	94.99

TABLE IX.

MODIFIED N_x COLUMNS FOR MONTHLY PREMIUMS.

National Fraternal Congress Mortality Table, and Three Per Cent, Three and One-Half Per Cent, and Four Per Cent Interest.

	3%	3½%	4%		3%	3½%	4%
x	N_x^{12}	N_x^{12}	N_x^{12}	x	N_x^{12}	N_x^{12}	N_x^{12}
20	1315233	1093510	914228	60	137071	98525.1	70996.2
21	1260729	1044150	869496	61	125503	89892.7	64545.4
22	1208078	996692	826700	62	114537	81749.1	58489.1
23	1157219	951072	785758	63	104163	74082.1	52814.6
24	1108092	907219	746591	64	94370.2	66880.0	47509.8
25	1060641	865066	709123	65	85149.7	60131.4	42563.0
26	1014810	824550	673283	66	76491.7	53825.1	37962.6
27	970547	785608	639002	67	68386.6	47950.1	33697.4
28	927800	748182	606213	68	60825.0	42495.5	29756.5
29	886520	712215	574854	69	53796.9	37450.1	26128.8
30	846660	677653	544865	70	47291.7	32802.8	22803.3
31	808174	644443	516188	71	41298.3	28541.8	19768.9
32	771018	612536	488768	72	35805.0	24655.2	17014.4
33	735149	581883	462553	73	30798.8	21130.2	14528.2
34	700528	552440	437493	74	26265.3	17953.5	12298.5
35	667114	524160	413539	75	22188.9	15111.0	10312.9
36	634871	497003	390646	76	18552.4	12587.4	8558.49
37	603761	470927	368771	77	15336.6	10366.5	7022.
38	573750	445894	347872	78	12520.6	8431.16	5689.46
39	544806	421867	327909	79	10081.5	6762.96	4546.38
40	516895	398810	308844	80	7994.71	5342.55	3577.77
41	489988	376689	290641	81	6233.55	4149.59	2768.17
42	464056	355473	273266	82	4769.91	3162.94	2101.80
43	439069	335130	256686	83	3574.37	2360.91	1562.71
44	415003	315630	240870	84	2616.58	1721.47	1134.98
45	391831	296946	225788	85	1865.87	1222.70	802.943
46	369529	279049	211412	86	1291.89	843.185	551.505
47	348072	261915	197714	87	865.154	562.391	366.366
48	327439	245517	184668	88	557.873	361.171	234.330
49	307606	229832	172249	89	344.536	222.143	143.539
50	288554	214837	160433	90	202.498	130.024	83.671
51	270262	200510	149198	91	112.390	71.8663	46.055
52	252711	186830	138522	92	58.3464	37.1528	23.710
53	235885	173778	128385	93	27.9993	17.7538	11.282
54	219765	161334	118767	94	12.2399	7.7281	4.890
55	204337	149482	109650	95	4.7967	3.0157	1.900
56	189585	138204	101017	96	1.6460	1.0305	.646
57	175495	127484	92850.3	97	0.4708	0.2936	.184
58	162054	117307	85134.6	98	0.0889	0.0552	.034
59	149252	107659	77854.7				

TABLE X.

VALUATION COLUMNS BY THE NATIONAL FRATERNAL CONGRESS TABLE
And Three Per Cent, Three and One-Half Per Cent, and Four Per Cent Interest.

		3%	3½%	4%			3%	3½%	4%
x	k _x	u _x	u _x	u _x	x	k _x	u _x	u _x	u _x
20	5.025	1.0352	1.0402	1.04523	60	23.280	1.0540	1.0591	1.06421
21	5.061	1.0352	1.0402	1.04526	61	25.266	1.0560	1.0612	1.06627
22	5.097	1.0352	1.0403	1.04530	62	27.458	1.0583	1.0634	1.06856
23	5.133	1.0353	1.0403	1.04534	63	29.901	1.0608	1.0660	1.07110
24	5.180	1.0353	1.0404	1.04539	64	32.600	1.0636	1.0687	1.07390
25	5.228	1.0354	1.0404	1.04544	65	35.615	1.0667	1.0719	1.07704
26	5.287	1.0354	1.0404	1.04550	66	38.983	1.0702	1.0754	1.08054
27	5.346	1.0355	1.0405	1.04556	67	42.711	1.0740	1.0792	1.08442
28	5.417	1.0355	1.0406	1.04563	68	46.874	1.0783	1.0835	1.08875
29	5.499	1.0357	1.0407	1.04572	69	51.499	1.0830	1.0883	1.09356
30	5.583	1.0358	1.0408	1.04581	70	56.690	1.0884	1.0937	1.09896
31	5.679	1.0358	1.0409	1.04590	71	62.487	1.0944	1.0996	1.10499
32	5.787	1.0360	1.0410	1.04602	72	68.937	1.1010	1.1063	1.11169
33	5.907	1.0361	1.0411	1.04614	73	76.208	1.1085	1.1139	1.11935
34	6.040	1.0362	1.0413	1.04628	74	84.339	1.1169	1.1224	1.12771
35	6.187	1.0364	1.0414	1.04643	75	93.465	1.1263	1.1317	1.13720
36	6.347	1.0365	1.0416	1.04660	76	103.744	1.1369	1.1424	1.14789
37	6.532	1.0367	1.0418	1.04679	77	115.326	1.1488	1.1544	1.15994
38	6.743	1.0369	1.0420	1.04700	78	128.457	1.1623	1.1680	1.17359
39	6.969	1.0372	1.0422	1.04725	79	143.315	1.1776	1.1833	1.18905
40	7.223	1.0374	1.0425	1.04751	80	160.208	1.1950	1.2008	1.20662
41	7.504	1.0377	1.0428	1.04780	81	179.517	1.2149	1.2208	1.22670
42	7.826	1.0381	1.0431	1.04814	82	201.590	1.2376	1.2437	1.24965
43	8.179	1.0384	1.0435	1.04851	83	226.934	1.2637	1.2699	1.27601
44	8.552	1.0388	1.0438	1.04889	84	256.346	1.2940	1.3003	1.30660
45	8.946	1.0392	1.0443	1.04931	85	290.463	1.3292	1.3356	1.34208
46	9.374	1.0397	1.0447	1.04974	86	330.400	1.3703	1.3766	1.38361
47	9.850	1.0401	1.0452	1.05024	87	377.700	1.4190	1.4259	1.43280
48	10.376	1.0407	1.0457	1.05079	88	433.842	1.4769	1.4840	1.49119
49	10.942	1.0413	1.0463	1.05138	89	501.910	1.5470	1.5545	1.56199
50	11.577	1.0419	1.0470	1.05204	90	584.258	1.6318	1.6397	1.64763
51	12.295	1.0427	1.0477	1.05279	91	688.245	1.7389	1.7474	1.75578
52	13.065	1.0435	1.0485	1.05358	92	817.337	1.8719	1.8810	1.89003
53	13.943	1.0444	1.0494	1.05450	93	993.827	2.0536	2.0636	2.07358
54	14.895	1.0453	1.0504	1.05549	94	1219.180	2.2858	2.2968	2.30794
55	15.956	1.0464	1.0515	1.05659	95	1517.240	2.5928	2.6054	2.61793
56	17.148	1.0477	1.0527	1.05783	96	1900.000	2.9870	3.0014	3.01600
57	18.454	1.0490	1.0541	1.05919	97	2333.333	3.4333	3.4501	3.46667
58	19.887	1.0505	1.0556	1.06068					
59	21.504	1.0522	1.0573	1.06237					

TABLE XI.
MAKEHAMIZED NATIONAL FRATERNAL CONGRESS TABLE OF MORTALITY
 (Graduation by Landis.)

Age.	l_x .	d_x .	p_x .	q_x .	h_x .
20	100000	503	.99497	.00503	.005029
21	99497	504	.99493	.00507	.005062
22	98993	506	.99489	.00511	.005098
23	98487	507	.99485	.00515	.005138
24	97980	509	.99481	.00519	.005183
25	97471	511	.99476	.00524	.005232
26	96960	514	.99470	.00530	.005286
27	96446	517	.99464	.00536	.005346
28	95929	521	.99457	.00543	.005412
29	95408	526	.99449	.00551	.005486
30	94882	531	.99440	.00560	.005567
31	94351	537	.99431	.00569	.005657
32	93814	543	.99421	.00579	.005756
33	93271	551	.99409	.00591	.005867
34	92720	560	.99396	.00604	.005988
35	92160	569	.99383	.00617	.006123
36	91591	580	.99367	.00632	.006272
37	91011	592	.99350	.00650	.006437
38	90419	606	.99330	.00670	.006620
39	89813	620	.99310	.00690	.006822
40	89193	637	.99286	.00714	.007045
41	88556	655	.99260	.00740	.007293
42	87901	676	.99231	.00769	.007566
43	87225	698	.99200	.00800	.007869
44	86527	723	.99164	.00836	.008204
45	85804	749	.99127	.00873	.008575
46	85055	780	.99083	.00917	.008985
47	84275	812	.99036	.00964	.009439
48	83463	848	.98984	.01016	.009941
49	82615	888	.98925	.01075	.010496
50	81727	930	.98862	.01138	.011111
51	80797	976	.98792	.01208	.011791
52	79821	1028	.98712	.01288	.012544
53	78793	1082	.98627	.01373	.013377
54	77711	1141	.98532	.01468	.014298
55	76570	1206	.98425	.01575	.015318
56	75364	1275	.98308	.01692	.016446
57	74089	1349	.98179	.01821	.017694
58	72740	1428	.98037	.01963	.019075
59	71312	1512	.97880	.02120	.020603
60	69800	1601	.97706	.02294	.022293
61	68199	1696	.97513	.02487	.024164
62	66503	1795	.97301	.02699	.026234
63	64708	1898	.97067	.02933	.028524
64	62810	2005	.96808	.03192	.031058
65	60805	2114	.96523	.03477	.033862

TABLE XI.
 MAKEHAMIZED NATIONAL FRATERAL CONGRESS TABLE OF MORTALITY
 —Continued.
 (Graduation by Landis—Continued.)

Age.	l_x .	d_x .	p_x .	q_x .	μ_x .
66	58691	2225	.96209	.03791	.036995
67	56466	2337	.95861	.04139	.040387
68	54129	2447	.95470	.04521	.044185
69	51682	2554	.95058	.04942	.048398
70	49128	2656	.94594	.05406	.053048
71	46472	2750	.94082	.05918	.058193
72	43722	2832	.93523	.06477	.063885
73	40890	2902	.92903	.07097	.070184
74	37988	2954	.92224	.07776	.077154
75	35034	2985	.91480	.08520	.084865
76	32049	2993	.90661	.09339	.093397
77	29056	2974	.89765	.10235	.102838
78	26082	2925	.88785	.11215	.113284
79	23157	2846	.87710	.12290	.124842
80	20311	2734	.86539	.13461	.137631
81	17577	2591	.85259	.14741	.151781
82	14986	2418	.83865	.16135	.167438
83	12568	2218	.82352	.17648	.184761
84	10350	1997	.80705	.19295	.203929
85	8353	1761	.78918	.21082	.225138
86	6592	1516	.77002	.22998	.248605
87	5076	1273	.74921	.25079	.274570
88	3803	1038	.72706	.27294	.303299
89	2765	821	.70307	.29693	.335087
90	1944	627	.67747	.32253	.370259
91	1317	461	.64996	.35004	.409176
92	856	324	.62150	.37850	.452236
93	532	217	.59211	.40789	.499881
94	315	139	.55873	.44127	.552598
95	176	83	.52841	.47159	.610928
96	93	48	.48387	.51613	.675468
97	45	24	.46667	.53333	.746879
98	21	12	.42857	.57143	.825893
99	9	6	.33333	.66667	.913319
100	3	3	.00000	1.00000	1.010053

Constants: $k=110239.3$.

$s=.9955888$.

$g=.9994988$.

$c=1.1064652$.

TABLE XII.
COMMUTATION COLUMNS.

Makehamized National Fraternal Congress Table of Mortality and 4 Per Cent Interest.

Age.	D _x .	N _x .	Age.	D _x .	N _x .
20	45639.0000	935010.000	61	6233.6000	67431.500
21	43663.0000	889371.000	62	5844.8000	61197.900
22	41770.0000	845708.000	63	5468.4000	55353.100
23	39959.0000	803938.000	64	5103.8000	49884.700
24	38224.0000	763979.000	65	4750.9000	44780.900
25	36563.0000	725755.000	66	4409.3000	40030.000
26	34973.0000	689192.000	67	4079.0000	35620.700
27	33449.0000	654219.000	68	3759.8000	31541.700
28	31990.0000	620770.000	69	3451.8000	27781.900
29	30593.0000	588780.000	70	3155.0000	24330.100
30	29254.0000	558187.000	71	2869.6000	21175.100
31	27971.0000	528933.000	72	2596.0000	18305.500
32	26743.0000	500962.000	73	2334.4000	15709.500
33	25565.0000	474219.000	74	2085.4000	13375.100
34	24436.0000	448654.000	75	1849.2000	11289.700
35	23355.0000	424218.000	76	1626.6000	9440.540
36	22318.0000	400863.000	77	1418.0000	7813.940
37	21324.0000	378545.000	78	1223.9000	6395.940
38	20370.0000	357221.000	79	1044.8000	5172.040
39	19455.0000	336851.000	80	881.1800	4127.240
40	18578.0000	317396.000	81	733.2200	3246.060
41	17736.0000	298818.000	82	601.1000	2512.840
42	16927.0000	281082.000	83	484.7200	1911.740
43	16151.0000	264155.000	84	383.8200	1427.020
44	15406.0000	248004.000	85	297.8500	1043.200
45	14690.0000	232598.000	86	226.0400	745.350
46	14001.0000	217908.000	87	167.3600	519.310
47	13339.0000	203907.000	88	120.5700	351.950
48	12703.0000	190568.000	89	84.2730	231.378
49	12090.0000	177865.000	90	56.9660	147.105
50	11500.0000	165775.000	91	37.1090	90.139
51	10932.0000	154275.000	92	23.2030	53.030
52	10384.0000	143343.000	93	13.8660	29.827
53	9856.5000	132958.600	94	7.8805	15.961
54	9347.2000	123102.100	95	4.2372	8.0805
55	8855.7000	113754.900	96	2.1426	3.8433
56	8381.0000	104899.200	97	1.0123	1.7007
57	7922.4000	96518.200	98	.44365	.68839
58	7479.0000	88595.800	99	.17892	.24474
59	7050.1000	81116.800	100	.065815	.065815
60	6635.2000	74066.700			

TABLE XIII.

ANNUITIES, SINGLE PREMIUMS AND ANNUAL PREMIUMS—ONE LIFE.

Makehamized National Fraternal Congress Table of Mortality and 4 Per Cent Interest.

Age.	Immediate Life Annuity. A _x .	Single Premium Per \$1,000. A _x .	Annual Premium Per \$1,000. P _x .
20	\$20.487	\$212.02	\$ 10.35
21	20.369	216.56	10.63
22	20.247	221.28	10.93
23	20.119	226.18	11.24
24	19.987	231.27	11.57
25	19.849	236.55	11.92
26	19.707	242.04	12.28
27	19.559	247.74	12.67
28	19.405	253.64	13.07
29	19.246	259.77	13.50
30	19.081	266.11	13.95
31	18.910	272.69	14.42
32	18.733	279.50	14.92
33	18.550	286.55	15.45
34	18.360	293.84	16.00
35	18.164	301.37	16.59
36	17.962	309.16	17.21
37	17.753	317.20	17.87
38	17.537	325.51	18.56
39	17.314	334.07	19.30
40	17.085	342.89	20.07
41	16.848	351.98	20.89
42	16.605	361.33	21.76
43	16.355	370.95	22.68
44	16.098	380.84	23.66
45	15.834	390.98	24.69
46	15.564	401.39	25.79
47	15.286	412.06	26.96
48	15.002	422.98	28.20
49	14.712	434.15	29.51
50	14.415	445.57	30.91
51	14.112	457.21	32.40
52	13.804	469.08	33.98
53	13.489	481.17	35.67
54	13.170	493.46	37.47
55	12.845	505.94	39.39
56	12.516	518.60	41.43
57	12.183	531.42	43.62
58	11.846	544.38	45.96
59	11.506	557.47	48.45
60	11.163	570.66	51.12
61	10.817	583.94	53.98
62	10.471	597.28	57.04
63	10.123	610.67	60.33
64	9.774	624.07	63.85
65	9.426	637.46	67.63
66	9.079	650.82	71.69
67	8.733	664.12	76.05
68	8.389	677.33	80.74
69	8.049	690.43	85.78
70	7.712	703.39	91.21
71	7.379	716.19	97.06
72	7.051	728.79	103.35
73	6.730	741.17	110.14
74	6.414	753.31	117.45
75	6.105	765.19	125.34
76	5.804	776.77	133.84
77	5.511	788.05	143.01
78	5.226	799.00	152.89
79	4.950	809.61	163.55
80	4.684	819.85	175.04

TABLE XIV.

MAKEHAMIZED NATIONAL FRATERNAL CONGRESS.

Table Showing the Addition to be made to the Younger of Two Lives in order to obtain the Equivalent Equal Ages.

Age.	l_{xx}	d_{xx}	$\log. l_{xx}$	$\log. d_{xx}$	Difference of Ages. (Years.)	Add to Younger Age.
20	1000000000	100300000	10.0000000	8.00130		
21	9899700000	100100000	9.9956174	.00043		
22	9799600000	999000000	.9912050	7.99957		
23	9699700000	995000000	.9867596	.99782		
24	9600200000	994000000	.9822776	.99739		
25	9500800000	995000000	.9777552	.99782	1.....	.50
26	9401300000	994000000	.9731880	.99739	2.....	1.05
27	9301900000	995000000	.9685712	.99782	3.....	1.60
28	9202400000	997000000	.9638996	.99870	4.....	2.19
29	9102700000	100100000	.9591674	8.00043	5.....	2.81
30	9002600000	100600000	.9543680	.00260	6.....	3.44
31	8902000000	100800000	.9494944	.00346	7.....	4.10
32	8801200000	101800000	.9445386	.00775	8.....	4.78
33	8699400000	102500000	.9394918	.01072	9.....	5.48
34	8596900000	103300000	.9343444	.01410	10.....	6.21
35	8493600000	104800000	.9290856	.02036	11.....	6.96
36	8388800000	105800000	.9237036	.02449	12.....	7.72
37	8283000000	107400000	.9181852	.03100	13.....	8.50
38	8175600000	109200000	.9125160	.03822	14.....	9.29
39	8066400000	111000000	.9066800	.04532	15.....	10.10
40	7955400000	113300000	.9006594	.05423	16.....	10.93
41	7842100000	115600000	.8944344	.06296	17.....	11.77
42	7726500000	118300000	.8879834	.07298	18.....	12.62
43	7608200000	121300000	.8812822	.08386	19.....	13.49
44	7486900000	124500000	.8743042	.09517	20.....	14.37
45	7362400000	128000000	.8670200	.10721	21.....	15.26
46	7234400000	132100000	.8593970	.12090	22.....	16.16
47	7102300000	136200000	.8513992	.13418	23.....	17.07
48	6966100000	140800000	.8429866	.14860	24.....	17.98
49	6825300000	145900000	.8341150	.16406	25.....	18.91
50	6679400000	151300000	.8247356	.17984	26.....	19.83
51	6528100000	156800000	.8147942	.19535	27.....	20.77
52	6371300000	162900000	.8042310	.21192	28.....	21.71
53	6208400000	169300000	.7929798	.22866	29.....	22.65
54	6039100000	176200000	.7809674	.24601	30.....	23.61
55	5862900000	183100000	.7681128	.26269	31.....	24.56
56	5679800000	190700000	.7543264	.28035	32.....	25.52
57	5489100000	198000000	.7395090	.29667	33.....	26.48
58	5291100000	205600000	.7235508	.31302	34.....	27.44
59	5085500000	213500000	.7063304	.32940	35.....	28.42
60	4872000000	221000000	.6877134	.34439	36.....	29.40
61	4651000000	228400000	.6675510	.35870	37.....	30.37
62	4422600000	235500000	.6456786	.37199	38.....	31.35
63	4187100000	242000000	.6219142	.38382	39.....	32.33
64	3945100000	247800000	.5960564	.39410	40.....	33.31
65	3697300000	252600000	.5678824	.40243	41.....	34.30

TABLE XIV.
MAKEHAMIZED NATIONAL FRATERNAL
CONGRESS—Continued.

Age.	l_{xx}	d_{xx}	$\log. l_{xx}$	$\log. d_{xx}$	Table Showing the Addition to be made to the Younger of Two Lives in order to obtain the Equivalent Equal Ages—Continued.	
					Differences of Ages. (Years.)	Add to Younger Age.
66	3444700000	256300000	.5371456	.40875		
67	3188400000	258500000	.5035730	.41246		
68	2929900000	258900000	.4668628	.41313		
69	2671000000	257400000	.4266810	.41061		
70	2413600000	254000000	.3826580	.40483		
71	2159600000	247900000	.3343848	.39428	42.....	35.28
72	1911700000	239700000	.2814088	.37967	43.....	36.27
73	1672000000	228900000	.2232294	.35965	44.....	37.26
74	1443100000	215700000	.1592926	.33385	45.....	38.25
75	1227400000	200300000	.0889854	.30168	46.....	39.24
76	1027100000	182850000	.0116296	.26210	47.....	40.23
77	844250000	163970000	8.9264748	.21476	48.....	41.22
78	680280000	144040000	.8326906	.15848	49.....	42.21
79	536240000	123710000	.7293582	.09240	50.....	43.20
80	412530000	103590000	.6154612	.01532		
81	308940000	84370000	.4898748	7.92619		
82	224570000	66620000	.3513544	.82360		
83	157950000	50830000	.1985230	.70612		
84	107120000	37350000	.0298570	.57229		
85	69770000	26309000	7.8436706	.42010		
86	43461000	17693000	.6380984	.24780		
87	25768000	11303000	.4110766	.05319		
88	14465000	6821200	.1603216	6.83386		
89	7643800	3866000	6.8833066	.58726		
90	3777800	2043900	.5772358	.31046		
91	1733900	1000700	.2390158	.00030		
92	733200	450020	5.8652238	5.65323		
93	283180	184240	.4520726	.26538		
94	98940	68002	4.9953718	4.83252		
95	30938	22382	.4904850	.34990		
96	8556	6490	3.9322820	3.81224		
97	2066	1637	.3150864	.21405		
98	429	354	2.6326176	2.54900		
99	75	64	1.8779264	1.80618		
100	11	11	.0433234	.04139		

TABLE XV.
COMMUTATION COLUMNS FOR JOINT LIVES.

Makehamized National Fraternal Congress Table of Mortality and 4 Per Cent Interest.

Age.	D _{xx}	N _{xx}	C _{xx}	M _{xx}
20	4563900000	83340300000	44015000	1358500000
21	4344300000	78776400000	42238000	1314500000
22	4135000000	74432100000	40532000	1272200000
23	3935400000	70297100000	38817000	1231700000
24	3745200000	66361700000	37287000	1192900000
25	3563900000	62616500000	35888000	1156600000
26	3390900000	59052600000	34474000	1119700000
27	3226000000	55661700000	33181000	1085200000
28	3068800000	52435700000	31969000	1052000000
29	2918800000	49366900000	30862000	1020100000
30	2775700000	46448100000	29824000	989200000
31	2639100000	43672400000	28734000	959380000
32	2508800000	41033300000	27903000	930650000
33	2384500000	38524500000	27014000	902740000
34	2265700000	36140000000	26178000	875730000
35	2152400000	33874300000	25536000	849550000
36	2044100000	31721900000	24789000	824020000
37	1940700000	29677800000	24195000	799230000
38	1841800000	27737100000	23655000	775030000
39	1747400000	25895300000	23120000	751380000
40	1657000000	24147900000	22691000	728260000
41	1570600000	22490900000	22262000	705570000
42	1487900000	20920300000	21905000	683300000
43	1408800000	19432400000	21597000	661400000
44	1333000000	18023600000	21314000	639800000
45	1260400000	16690600000	21071000	618490000
46	1190900000	15430200000	20909000	597420000
47	1124200000	14239300000	20729000	576510000
48	1060200000	13115100000	20605000	555780000
49	998810000	12054900000	20530000	535170000
50	939870000	11056100000	20471000	514640000
51	883270000	10116250000	20400000	494170000
52	828890000	9232980000	20377000	473770000
53	776630000	8404090000	20364000	453400000
54	726390000	7627460000	20379000	433030000
55	678080000	6901070000	20362000	412650000
56	631630000	6222990000	20392000	392290000
57	586960000	5591360000	20358000	371900000
58	544020000	5004400000	20326000	351540000
59	502760000	4460380000	20296000	331210000
60	463140000	3957620000	20200000	310920000
61	425130000	3494480000	20074000	290720000
62	388700000	3069350000	19902000	270640000
63	353850000	2680650000	19665000	250740000
64	320570000	2326800000	19361000	231080000
65	288880000	2006230000	18977000	211720000

TABLE XV.
COMMUTATION COLUMNS FOR JOINT LIVES—Continued.

Makehamized National Fraternal Congress Table of Mortality and 4 Per Cent Interest—
Continued.

Age.	D _{xx}	N _{xx}	C _{xx}	M _{xx}
66	258790000	1717350000	18515000	192740000
67	230320000	1458560000	17955000	174220000
68	203510000	1228240000	17291000	156270000
69	178390000	1024730000	16530000	138980000
70	155000000	846340000	15684000	122450000
71	133360000	691340000	14719000	106760000
72	113504000	557980000	13685000	92046000
73	95454000	444476000	12566000	78361000
74	79218000	349022000	11385000	65795000
75	64787000	269804000	10166000	54410000
76	52131000	205017000	8923400	44244000
77	41201000	152886000	7694100	35320000
78	31922000	111685000	6499100	27626000
79	24195000	79763000	5367000	21127000
80	17897000	55568000	4321400	15760000
81	12888000	37669600	3384200	11439000
82	9007800	24781600	2569400	8054600
83	6091900	15773800	1885000	5485200
84	3972400	9681900	1331900	3600200
85	2487900	5709500	902050	2268300
86	1490200	3221600	583310	1366300
87	849530	1731380	358310	782940
88	458550	881850	207920	424630
89	232991	423300	113310	216710
90	110720	190309	57601	103400
91	48863	79589	27116	45802
92	19868.2	30726	11725	18686
93	7378.6	10857.8	4615.8	6960.8
94	2478.8	3479.2	1638.1	2345.
95	745.28	1000.44	518.4	706.92
96	198.19	255.164	144.6	188.52
97	46.010	56.974	35.1	43.92
98	9.1907	10.9641	7.3	8.82
99	1.5546	1.7734	1.3	1.52
100	.21877	.21877	.22	.22

TABLE XVI.
ANNUITIES, SINGLE PREMIUMS AND ANNUAL PREMIUMS—TWO LIVES,
EQUAL AGES.

Makehamized National Fraternal Congress Table of Mortality and 4 Per Cent Interest.

Immediate Joint Life Annuity			Immediate Joint Life Annuity				
Age	a _{xx}	A _{xx}	P _{xx}	Age	a _{xx}	A _{xx}	P _{xx}
20	18.2609	297.65	16.30	61	8.2199	683.85	83.19
21	18.1334	302.55	16.69	62	7.8965	696.28	88.18
22	18.0007	307.66	17.09	63	7.5758	708.62	93.54
23	17.8626	312.97	17.52	64	7.2583	720.83	99.31
24	17.7190	318.49	17.98	65	6.9449	732.89	105.53
25	17.5698	324.23	18.45				
26	17.4148	330.19	18.96	66	6.6361	744.76	112.23
27	17.2538	336.38	19.50	67	6.3326	756.43	119.45
28	17.0868	342.81	20.06	68	6.0351	767.88	127.23
29	16.9136	349.47	20.66	69	5.7442	779.07	135.63
30	16.7340	356.38	21.30	70	5.4604	789.98	144.68
31	16.5480	363.53	21.97	71	5.1841	800.61	154.43
32	16.3555	370.93	22.68	72	4.9160	810.92	164.95
33	16.1561	378.59	23.43	73	4.6564	829.90	176.30
34	15.9506	386.51	24.23	74	4.4058	830.54	188.51
35	15.7381	394.68	25.08	75	4.1645	839.82	201.66
36	15.5187	403.12	25.98	76	3.9327	848.73	215.81
37	15.2926	411.82	26.93	77	3.7107	857.28	231.03
38	15.0595	420.78	27.94	78	3.4987	865.43	247.36
39	14.8198	430.00	29.02	79	3.2967	873.20	264.87
40	14.5732	439.49	30.16	80	3.1048	880.58	283.62
41	14.3199	449.23	31.37	81	2.9229	887.58	303.66
42	14.0600	459.22	32.66	82	2.7511	894.19	325.03
43	13.7936	469.47	34.04	83	2.5893	900.41	347.74
44	13.5208	479.96	35.50	84	2.4373	906.26	371.83
45	13.2420	490.69	37.06	85	2.2949	911.73	397.29
46	12.9571	501.64	38.72	86	2.1619	916.85	424.09
47	12.6665	512.82	40.49	87	2.0381	921.61	452.20
48	12.3705	524.21	42.38	88	1.9230	926.03	481.53
49	12.0693	535.79	44.39	89	1.8168	930.12	511.95
50	11.7634	547.55	46.55	90	1.7188	933.89	543.34
51	11.4532	559.49	48.85	91	1.6288	937.35	575.48
52	11.1390	571.57	51.31	92	1.5465	940.52	608.16
53	10.8213	583.79	53.95	93	1.4715	943.40	641.10
54	10.5006	596.13	56.77	94	1.4036	946.01	673.99
55	10.1774	608.56	59.80	95	1.3424	948.37	706.49
56	9.8523	621.06	63.04	96	1.2875	950.48	738.25
57	9.5260	633.61	66.51	97	1.2383	952.37	769.10
58	9.1989	646.19	70.25	98	1.1930	954.12	799.80
59	8.8718	658.77	74.26	99	1.1407	956.13	838.17
60	8.5452	671.33	78.56	100	1.0000	961.53	961.53

TABLE XVII.
FRATERNAL CONGRESS EXPERIENCE, FOUR PER CENT—WHOLE LIFE
POLICY FOR \$1000.

Age.	<i>Net Reserve at End of Year.</i>											
	1	2	3	4	5	6	7	8	9	10	11	12
20	\$ 5.78	\$11.79	\$18.04	\$24.53	\$31.27	\$38.27	\$45.53	\$53.07	\$60.89	\$68.99	\$77.37	\$86.06
21	6.04	12.32	18.85	25.63	32.67	39.98	47.56	55.42	63.57	72.00	80.74	89.78
22	6.32	12.89	19.71	26.80	34.15	41.78	49.69	57.88	66.37	75.16	84.26	93.66
23	6.62	13.48	20.61	28.01	35.69	43.65	51.89	60.44	69.28	78.43	87.90	97.68
24	6.91	14.09	21.54	29.26	37.28	45.58	54.18	63.08	72.30	81.83	91.67	101.85
25	7.23	14.73	22.51	30.58	38.94	47.60	56.56	65.84	75.44	85.35	95.60	106.18
26	7.55	15.39	23.52	31.94	40.66	49.69	59.04	68.70	78.69	89.01	99.66	110.65
27	7.90	16.09	24.57	33.36	42.46	51.88	61.62	71.68	82.08	92.82	103.89	115.29
28	8.26	16.81	25.67	34.84	44.33	54.15	64.29	74.77	85.59	96.75	108.25	120.08
29	8.62	17.56	26.81	36.38	46.27	56.50	67.07	77.98	89.23	100.82	112.76	125.04
30	9.01	18.34	28.00	37.98	48.30	58.96	69.96	81.31	93.00	105.04	117.43	130.16
31	9.41	19.15	29.22	39.64	50.39	61.50	72.95	84.75	96.90	109.40	122.25	135.43
32	9.84	20.01	30.52	41.38	52.59	64.15	76.06	88.33	100.95	113.91	127.22	140.88
33	10.27	20.88	31.85	43.17	54.85	66.87	79.26	92.00	105.10	118.54	132.33	146.47
34	10.73	21.81	33.25	45.05	57.20	69.72	82.59	95.83	109.41	123.34	137.62	152.28
35	11.20	22.77	34.69	46.98	59.63	72.64	86.02	99.75	113.83	128.27	143.08	158.27
36	11.69	23.75	36.18	48.97	62.13	75.66	89.55	103.79	118.39	133.37	148.73	164.46
37	12.19	24.76	37.70	51.02	64.71	78.76	93.17	107.95	123.10	138.64	154.56	170.84
38	12.73	25.84	39.32	53.18	67.40	81.99	96.95	112.29	128.02	144.13	160.61	177.47
39	13.27	26.93	40.96	55.37	70.14	85.30	100.84	116.77	133.09	149.79	166.86	184.31
40	13.84	28.07	42.67	57.64	73.00	88.75	104.90	121.44	138.36	155.66	173.34	191.36
41	14.43	29.23	44.42	59.99	75.96	92.34	109.11	126.26	143.81	161.74	180.02	198.65
42	15.03	30.44	46.23	62.44	79.05	96.07	113.48	131.29	149.47	168.02	186.92	206.15
43	15.65	31.69	48.14	65.01	82.29	99.96	118.04	136.50	155.33	174.52	194.05	213.89
44	16.30	33.02	50.15	67.70	85.66	104.02	122.78	141.91	161.41	181.24	201.40	221.88
45	16.99	34.41	52.25	70.51	89.18	108.25	127.69	147.51	167.67	188.17	208.98	230.07
46	17.72	35.87	54.44	73.43	92.83	112.61	132.77	153.28	174.14	195.31	216.76	238.47
47	18.47	37.38	56.71	76.46	96.60	117.12	138.00	159.23	180.79	202.62	224.73	247.09
48	19.26	38.96	59.08	79.60	100.51	121.79	143.42	165.37	187.62	210.15	232.92	255.91
49	20.08	40.60	61.51	82.84	104.53	126.58	148.97	171.66	194.62	217.85	241.29	264.91
50	20.93	42.28	64.04	86.18	108.68	131.53	154.69	178.12	201.82	225.74	249.84	274.09
51	21.80	44.03	66.64	89.63	112.97	136.61	160.55	184.76	209.18	233.80	258.57	283.44
52	22.72	45.84	69.34	93.19	117.37	141.84	166.59	191.56	216.73	242.04	267.47	292.97
53	23.65	47.70	72.11	96.85	121.89	147.21	172.71	198.52	224.42	250.44	276.53	302.66
54	24.62	49.63	74.96	100.61	126.54	152.71	179.09	205.63	232.28	259.00	285.76	312.49
55	25.64	51.61	77.91	104.50	131.33	158.37	185.58	212.90	240.30	267.73	295.14	322.46
56	26.66	53.64	80.93	108.47	136.23	164.14	192.19	220.31	248.46	276.59	304.63	332.54
57	27.73	55.77	84.06	112.58	141.26	170.07	198.96	227.88	256.78	285.59	314.27	342.75
58	28.84	57.94	87.27	116.77	146.40	176.12	205.85	235.58	265.21	294.71	324.01	353.06
59	29.96	60.16	90.53	121.05	151.64	182.28	212.88	243.39	273.76	303.93	333.84	363.42
60	31.13	62.44	93.90	125.44	157.02	188.57	220.02	251.33	282.43	313.26	343.76	373.86
61	32.32	64.79	97.34	129.93	162.49	194.96	227.27	259.37	291.20	322.67	353.74	384.36
62	33.55	67.19	100.88	134.53	168.07	201.47	234.64	267.53	300.06	332.16	363.80	394.88
63	34.80	69.66	104.47	139.18	173.74	208.06	242.09	275.75	308.97	341.71	373.87	405.41
64	36.11	72.19	108.15	143.95	179.51	214.77	249.64	284.06	317.97	351.29	383.97	415.94
65	37.42	74.73	111.88	148.77	185.35	221.53	257.23	292.42	326.99	360.89	394.06	426.44
66	38.76	77.35	115.67	153.67	191.26	228.36	264.91	300.82	336.04	370.50	404.14	436.91
67	40.14	80.01	119.55	158.65	197.24	235.27	272.63	309.27	345.12	380.12	414.21	447.32
68	41.54	82.72	123.46	163.67	203.28	242.21	280.38	317.73	354.19	389.71	424.20	457.64
69	42.97	85.47	127.42	168.76	209.37	249.20	288.16	326.20	363.26	399.25	434.14	467.87
70	44.41	88.24	131.43	173.87	215.48	256.20	295.95	334.67	372.28	408.73	443.97	477.96

TABLE XVII.—Continued.
FRATERNAL CONGRESS EXPERIENCE, FOUR PER CENT—WHOLE LIFE
POLICY FOR \$1000.—Continued.

Age.	Net Reserve at End of Year.											
	13	14	15	16	17	18	19	20	21	22	23	24
20	\$ 95.05	\$ 104.35	\$ 113.95	\$ 123.87	\$ 134.12	\$ 144.69	\$ 155.57	\$ 166.78	\$ 178.31	\$ 190.17	\$ 202.33	\$ 214.81
21	99.13	108.80	118.78	129.08	139.71	150.66	161.93	173.53	185.45	197.69	210.24	223.11
22	103.38	113.43	123.79	134.49	145.50	156.84	168.51	180.51	192.82	205.44	218.39	231.67
23	107.79	118.22	128.99	140.07	151.48	163.23	175.30	187.69	200.39	213.42	226.79	240.49
24	112.35	123.18	134.34	145.83	157.65	169.81	182.28	195.07	208.18	221.64	235.43	249.56
25	117.08	128.32	139.89	151.79	164.03	176.59	189.47	202.67	216.22	230.11	244.34	258.89
26	121.97	133.62	145.62	157.94	170.59	183.56	196.87	210.51	224.50	238.83	253.49	268.48
27	127.03	139.12	151.53	164.28	177.35	190.76	204.51	218.60	233.04	247.81	262.92	278.35
28	132.26	144.78	157.62	170.80	184.31	198.17	212.38	226.94	241.82	257.05	272.61	288.47
29	137.66	150.61	163.90	177.52	191.50	205.83	220.50	235.51	250.87	266.55	282.54	298.85
30	143.23	156.63	170.37	184.47	198.92	213.72	228.86	244.35	260.17	276.30	292.75	309.47
31	148.95	162.82	177.05	191.63	206.56	221.85	237.47	253.44	269.72	286.31	303.19	320.35
32	154.87	169.23	183.96	199.03	214.46	230.24	246.35	262.79	279.54	296.58	313.90	331.49
33	160.97	175.84	191.07	206.65	222.58	238.86	255.45	272.37	289.58	307.08	324.84	342.84
34	167.30	182.68	198.42	214.52	230.97	247.74	264.83	282.22	299.89	317.84	336.03	354.44
35	173.82	189.73	206.00	222.63	239.58	256.85	274.43	292.30	310.44	328.83	347.43	366.25
36	180.55	197.01	213.82	230.96	248.44	266.21	284.28	302.63	321.22	340.04	359.07	378.28
37	187.49	204.51	221.85	239.53	257.52	275.80	294.37	313.18	332.22	351.48	370.93	390.49
38	194.70	212.25	230.15	248.36	266.87	285.66	304.71	323.98	343.48	363.15	382.98	402.92
39	202.09	220.22	238.66	257.42	276.45	295.74	315.26	335.01	354.94	375.02	395.22	415.51
40	209.74	228.43	247.43	266.72	286.27	306.06	326.07	346.26	366.62	387.09	407.65	428.27
41	217.60	236.87	256.43	276.25	296.32	316.61	337.09	357.73	378.48	399.34	420.35	441.18
42	225.70	245.55	265.66	286.61	307.61	327.39	348.33	369.39	390.55	411.76	433.00	454.22
43	234.05	254.47	275.13	296.04	317.13	338.39	359.77	381.26	402.79	424.36	445.90	467.38
44	242.62	263.62	284.85	306.28	327.88	349.60	371.42	393.30	415.21	437.10	458.91	480.64
45	251.41	273.00	294.78	316.74	338.82	361.01	383.25	405.52	427.77	449.95	472.03	493.96
46	260.44	282.59	304.93	327.40	349.96	372.59	395.24	417.88	440.44	462.90	485.21	507.33
47	269.65	292.39	315.26	338.23	361.27	384.33	407.37	430.34	453.21	475.92	498.44	520.72
48	279.07	302.37	325.78	349.25	372.75	396.22	419.62	442.92	466.06	489.01	511.70	534.10
49	288.66	312.53	336.46	360.42	384.36	408.22	431.98	455.57	478.97	502.10	524.94	547.45
50	298.44	322.86	347.31	371.74	396.09	420.33	444.41	468.29	491.90	515.21	538.17	560.74
51	308.39	333.36	358.31	383.18	407.94	432.53	456.92	481.04	504.84	528.30	551.34	573.94
52	318.50	344.01	369.43	394.75	419.89	444.82	469.47	493.81	517.79	541.34	564.45	587.05
53	328.76	354.77	380.67	406.40	431.91	457.14	482.04	506.57	530.68	554.32	577.45	600.03
54	339.14	365.67	392.01	418.14	443.98	469.49	494.62	519.31	543.52	567.21	590.34	612.88
55	349.65	376.67	403.45	429.95	456.09	481.86	507.17	532.00	556.29	580.00	603.10	625.53
56	360.26	387.76	414.95	441.78	468.23	494.21	519.68	544.61	568.95	592.66	615.68	638.00
57	370.99	398.93	426.50	453.66	480.36	506.53	532.14	557.15	581.51	605.60	628.09	650.26
58	381.79	410.14	438.09	465.54	492.46	518.80	544.52	569.57	593.90	617.48	640.28	662.27
59	392.62	421.39	449.66	477.38	504.51	530.99	556.78	581.83	606.12	629.60	652.23	674.02
60	403.52	432.67	461.24	489.21	516.50	543.09	568.92	593.95	618.16	641.49	663.95	685.51
61	414.44	443.93	472.79	500.97	528.41	555.07	580.90	605.89	629.97	653.15	675.41	696.71
62	425.36	455.19	484.30	512.66	540.21	566.91	592.73	617.62	641.57	664.57	686.58	707.61
63	436.27	466.40	495.74	524.24	551.87	578.58	604.34	629.12	652.92	675.70	697.46	718.21
64	447.16	477.56	507.09	535.71	563.39	590.07	615.75	640.41	664.01	686.55	708.05	728.47
65	457.99	488.62	518.32	547.03	574.72	601.35	626.94	651.42	674.81	697.11	718.29	738.40
66	468.74	499.59	529.42	558.18	585.85	612.43	637.86	662.17	685.33	707.34	728.23	747.96
67	479.41	510.45	540.37	569.16	596.80	623.26	648.54	672.65	695.54	717.27	737.80	757.24
68	489.97	521.14	551.14	579.94	607.51	633.84	658.95	682.81	705.45	726.83	747.08	766.04
69	500.39	531.68	561.74	590.50	617.98	644.17	669.06	692.68	714.99	736.12	755.90	774.63
70	510.66	542.06	572.11	600.82	628.20	654.20	678.88	702.19	724.27	744.94	764.51	782.20

TABLE XVII.—Continued.
FRATERNAL CONGRESS EXPERIENCE, FOUR PER CENT—WHOLE LIFE
POLICY FOR \$1000.—Continued.

Age.	Net Reserve at End of Year.											
	37	38	39	40	41	42	43	44	45	46	47	48
20	\$ 405.31	\$ 421.79	\$ 438.47	\$ 455.29	\$ 472.25	\$ 489.31	\$ 506.44	\$ 523.62	\$ 540.82	\$ 558.01	\$ 575.14	\$ 592.20
21	418.43	435.20	452.12	469.18	486.34	503.57	520.85	538.15	555.44	572.67	589.82	606.86
22	431.77	448.80	465.96	483.22	500.56	517.94	535.35	552.74	570.07	587.33	604.47	621.47
23	445.29	462.56	479.93	497.38	514.88	532.39	549.89	567.34	584.71	601.93	619.06	635.98
24	458.98	476.47	494.03	511.65	529.28	546.90	564.46	581.94	599.31	616.53	633.56	650.36
25	472.83	490.51	508.25	526.00	543.74	561.43	579.03	596.52	613.86	631.01	647.93	664.61
26	486.80	504.67	522.55	540.42	558.23	575.97	593.58	611.05	628.32	645.37	662.17	678.67
27	500.90	518.92	536.92	554.87	572.74	590.49	608.09	625.49	642.67	659.60	676.23	692.54
28	515.09	533.24	551.33	569.34	587.23	604.97	622.51	639.82	656.89	673.65	690.09	706.17
29	529.35	547.59	565.76	583.79	601.68	619.37	636.83	654.03	670.93	687.51	703.73	719.56
30	543.66	561.98	580.17	598.21	616.06	633.67	651.02	668.07	684.79	701.15	717.12	732.68
31	557.99	576.35	594.56	612.56	630.33	647.85	665.05	681.92	698.43	714.55	730.25	745.49
32	572.33	590.71	608.89	626.83	644.50	661.87	678.90	695.57	711.84	727.69	743.08	758.00
33	586.64	605.00	623.11	640.97	658.51	675.71	692.54	708.97	724.98	740.52	755.59	770.16
34	600.90	619.21	637.25	654.97	672.35	689.35	705.96	722.13	737.83	753.06	767.78	781.97
35	615.08	633.31	651.23	668.79	685.99	702.77	719.11	734.99	750.38	765.26	779.61	793.41
36	629.16	647.28	665.04	682.43	699.40	715.93	731.99	747.55	762.60	777.11	791.07	804.48
37	643.10	661.07	678.66	695.84	712.56	728.81	744.56	759.79	774.47	788.59	802.16	815.14
38	656.89	674.70	692.09	709.02	725.47	741.41	756.82	771.69	785.99	799.72	812.86	825.42
39	670.51	688.11	705.27	721.92	738.07	753.69	768.74	783.23	797.14	810.45	823.17	835.30
40	683.92	701.30	718.19	734.55	750.38	765.63	780.31	794.41	807.90	820.79	833.08	844.75
41	697.11	714.23	730.83	746.87	762.34	777.23	791.52	805.21	818.28	830.74	842.58	853.81
42	710.05	726.89	743.17	758.87	773.97	788.47	802.36	815.62	828.26	840.27	851.68	862.44
43	722.72	739.25	755.19	770.52	785.25	799.34	812.81	825.64	837.84	849.41	860.34	870.70
44	735.11	751.30	766.88	781.84	796.15	809.83	822.87	835.26	847.02	858.13	868.64	878.49
45	747.18	763.01	778.22	792.77	806.68	819.94	832.53	844.48	855.77	866.47	876.48	885.95
46	758.92	774.39	789.19	803.34	816.83	829.64	841.80	853.28	864.16	874.34	883.98	892.70
47	770.32	785.39	799.79	813.52	826.56	838.94	850.63	861.71	872.07	881.89	890.76	898.90
48	781.35	796.02	810.01	823.30	835.91	847.82	859.11	869.67	879.66	888.72	896.99	904.86
49	792.01	806.28	819.83	832.69	844.83	856.34	867.11	877.30	886.52	894.99	902.99	912.42
50	802.31	816.13	829.26	841.65	853.39	864.38	874.78	884.19	892.82	901.00	910.62	930.63
51	812.20	825.61	838.27	850.26	861.48	872.11	881.72	890.53	898.88	908.71	929.15	
52	821.72	834.66	846.92	858.40	869.26	879.08	888.09	896.63	906.68	927.57		
53	830.82	843.36	855.10	866.22	876.27	885.48	894.23	904.51	925.89			
54	839.57	851.59	862.98	873.27	882.71	891.66	902.19	924.09				
55	847.85	859.52	870.07	879.75	888.93	899.73	922.18					
56	855.82	866.65	876.58	886.01	897.09	920.13						
57	863.00	873.20	882.88	894.27	917.94							
58	869.59	879.54	891.25	915.60								
59	875.97	888.02	913.09									
60	884.57	910.41										
61	907.53											
	Net Reserve at End of Year.											
Age.	49	50	51	52	53	54	55	56	57	58	59	60
20	609.13	625.93	642.54	658.94	675.10	690.97	706.54	721.77	736.64	751.12	765.19	778.82
21	623.75	640.46	656.95	673.21	689.17	704.83	720.15	735.10	749.67	763.82	777.54	790.80
22	638.28	654.87	671.22	687.28	703.04	718.45	733.50	748.15	762.39	776.18	789.53	802.39
23	652.68	669.13	685.30	701.15	716.66	731.80	746.55	760.88	774.76	788.19	801.13	813.59
24	666.93	683.20	699.16	714.77	730.01	744.86	759.28	773.26	786.78	799.81	812.35	824.39
25	681.00	697.06	712.79	728.14	743.09	757.61	771.69	785.29	798.42	811.04	823.17	834.77

TABLE XVIII.
AMERICAN EXPERIENCE MORTALITY TABLE.

x	l_x	d_x	1000 q_x	e_x	x	l_x	d_x	1000 q_x	e_x
10	100,000	749	7.490	48.72	53	66,797	1,091	16.333	18.79
11	99,251	746	7.516	48.08	54	65,706	1,143	17.396	18.09
12	98,505	743	7.543	47.45	55	64,563	1,199	18.571	17.40
13	97,762	740	7.569	46.80	56	63,364	1,260	19.885	16.72
14	97,022	737	7.596	46.16	57	62,104	1,325	21.335	16.05
15	96,285	735	7.634	45.50	58	60,779	1,394	22.936	15.39
16	95,550	732	7.661	44.85	59	59,385	1,468	24.720	14.74
17	94,818	729	7.688	44.19	60	57,917	1,546	26.693	14.10
18	94,089	727	7.727	43.53	61	56,371	1,628	28.880	13.47
19	93,362	725	7.765	42.87	62	54,743	1,713	31.292	12.86
20	92,637	723	7.805	42.20	63	53,030	1,800	33.943	12.26
21	91,914	722	7.855	41.53	64	51,230	1,889	36.873	11.67
22	91,192	721	7.906	40.85	65	49,341	1,980	40.129	11.10
23	90,471	720	7.958	40.17	66	47,361	2,070	43.707	10.54
24	89,751	719	8.011	39.49	67	45,291	2,158	47.647	10.00
25	89,032	718	8.065	38.81	68	43,133	2,243	52.002	9.47
26	88,314	718	8.130	38.12	69	40,890	2,321	56.762	8.97
27	87,596	718	8.197	37.43	70	38,569	2,391	61.993	8.48
28	86,878	718	8.264	36.73	71	36,178	2,448	67.665	8.00
29	86,160	719	8.345	36.03	72	33,730	2,487	73.733	7.55
30	85,441	720	8.427	35.33	73	31,243	2,505	80.178	7.11
31	84,721	721	8.510	34.63	74	28,738	2,501	87.028	6.68
32	84,000	723	8.607	33.92	75	26,237	2,476	94.371	6.27
33	83,277	726	8.718	33.21	76	23,761	2,431	102.311	5.88
34	82,551	729	8.831	32.50	77	21,330	2,369	111.064	5.49
35	81,822	732	8.946	31.78	78	18,961	2,291	120.827	5.11
36	81,090	737	9.089	31.07	79	16,670	2,196	131.734	4.74
37	80,353	742	9.234	30.35	80	14,474	2,091	144.466	4.39
38	79,611	749	9.408	29.62	81	12,383	1,964	158.605	4.05
39	78,862	756	9.586	28.90	82	10,419	1,816	174.297	3.71
40	78,106	765	9.794	28.18	83	8,603	1,648	191.561	3.39
41	77,341	774	10.008	27.45	84	6,955	1,470	211.359	3.08
42	76,567	785	10.252	26.72	85	5,485	1,292	235.552	2.77
43	75,782	797	10.517	26.00	86	4,193	1,114	265.681	2.47
44	74,985	812	10.829	25.27	87	3,079	933	303.020	2.18
45	74,173	828	11.163	24.54	88	2,146	744	346.692	1.91
46	73,345	848	11.562	23.81	89	1,402	555	395.863	1.66
47	72,497	870	12.000	23.08	90	847	385	454.545	1.42
48	71,627	896	12.509	22.36	91	462	246	532.466	1.19
49	70,731	927	13.106	21.63	92	216	137	634.259	.98
50	69,804	962	13.781	20.91	93	79	58	734.177	.80
51	68,842	1,001	14.541	20.20	94	21	18	857.143	.64
52	67,841	1,044	15.389	19.49	95	3	3	1000.000	.50

TABLE XIX.
 AMERICAN EXPERIENCE—FOUR PER CENT.
 Commutation Columns.

x	D_x	N_x	M_x	R_x
10	6755.641	137908.321	1451.4759	42004.234
11	6447.156	131152.680	1402.8223	40552.758
12	6152.593	124705.524	1356.2274	39149.936
13	5871.333	118552.931	1311.6047	37793.709
14	5602.778	112681.598	1268.8716	36482.104
15	5346.364	107078.820	1227.9486	35213.232
16	5101.492	101732.456	1188.7063	33985.283
17	4867.702	96630.964	1151.1274	32796.577
18	4644.497	91763.262	1115.1419	31645.449
19	4431.356	87118.765	1080.6354	30530.307
20	4227.832	82687.409	1047.5473	29449.672
21	4033.496	78459.577	1015.8196	28402.125
22	3847.894	74426.081	985.3544	27386.305
23	3670.647	70578.187	956.1015	26400.951
24	3501.380	66907.540	928.0128	25444.849
25	3339.739	63406.160	901.0419	24516.836
26	3185.391	60066.421	875.1444	23615.794
27	3037.974	56881.030	850.2430	22740.650
28	2897.185	53843.056	826.2993	21890.407
29	2762.733	50945.871	803.2765	21064.108
30	2634.305	48183.138	781.1084	20260.831
31	2511.641	45548.833	759.7633	19479.723
32	2394.487	43037.192	739.2106	18719.961
33	2282.574	40642.705	719.3936	17980.750
34	2175.649	38360.131	700.2597	17261.356
35	2073.496	36184.482	681.7857	16561.096
36	1975.910	34110.986	663.9491	15879.310
37	1882.645	32135.076	646.6814	15215.361
38	1793.520	30252.431	629.9652	14568.680
39	1708.314	28458.911	613.7403	13938.715
40	1626.862	26750.597	597.9936	13324.975
41	1548.970	25123.735	582.6723	12726.981
42	1474.492	23574.765	567.7670	12144.308
43	1403.242	22100.273	553.2313	11576.541
44	1335.081	20697.031	539.0410	11023.310
45	1269.830	19361.950	525.1397	10484.269
46	1207.360	18092.120	511.5097	9959.1291
47	1147.501	16884.760	498.0873	9447.6194
48	1090.126	15737.259	484.8464	8949.5321
49	1035.085	14647.133	471.7342	8464.6857
50	982.2302	13612.048	458.6901	7992.9515
51	931.4364	12629.817	445.6742	7534.2614
52	882.5892	11698.381	432.6515	7088.5872
53	835.5838	10815.792	419.5918	6655.9357
54	790.3230	9980.2079	406.4691	6236.3439

TABLE XIX.
 AMERICAN EXPERIENCE—FOUR PER CENT.—Continued.
 Commutation Columns.

x	D _x	N _x	M _x	R _x
55	746.7065	9189.8849	393.2497	5829.8748
56	704.6535	8443.1784	379.9160	5436.6251
57	664.0783	7738.5249	366.4428	5056.7091
58	624.9134	7074.4466	352.8195	4690.2663
59	587.0969	6449.5332	339.0380	4337.4468
60	550.5613	5862.4363	325.0831	3998.4088
61	515.2547	5311.8750	310.9520	3673.3257
62	481.1291	4796.6203	296.6437	3362.3737
63	448.1477	4315.4912	282.1674	3065.7300
64	416.2850	3867.3435	267.5410	2783.5626
65	385.5146	3451.0585	252.7817	2516.0216
66	355.8120	3065.5439	237.9064	2263.2399
67	327.1735	2709.7319	222.9531	2025.3335
68	299.6005	2382.5584	207.9637	1802.3804
69	273.0969	2082.9579	192.9831	1594.4167
70	247.6878	1809.8610	178.0778	1401.4336
71	223.3970	1562.1732	163.3135	1223.3558
72	200.2700	1338.7762	148.7786	1060.0423
73	178.3688	1138.5062	134.5801	911.2637
74	157.7573	960.1374	120.8289	776.6836
75	138.4886	802.3801	107.6277	655.8547
76	120.5954	663.8915	95.0611	548.2270
77	104.0936	543.2961	83.1975	453.1659
78	88.97350	439.2025	72.0811	369.9684
79	75.21453	350.2290	61.7442	297.8873
80	62.79449	275.0144	52.2170	236.1431
81	51.65655	212.2199	43.4942	183.9261
82	41.79190	160.5634	35.6164	140.4319
83	33.18048	118.7715	28.6124	104.8155
84	25.79269	85.59102	22.5007	76.2031
85	19.55883	59.79833	17.2589	53.7024
86	14.37665	40.23950	12.8290	36.4435
87	10.15101	25.86285	9.15627	23.6145
88	6.802926	15.71184	6.19861	14.45882
89	4.273472	8.908914	3.93081	8.25962
90	2.482463	4.635442	2.30417	4.32881
91	1.301991	2.152979	1.21918	2.02464
92	.5853109	.8509883	.552581	.805462
93	.2058384	.2656774	.195621	.252881
94	.0526121	.0598390	.0503106	.0572596
95	.0072269	.0072269	.0069490	.0069490

TABLE XX.
AMERICAN EXPERIENCE AND FOUR PER CENT.

<i>Single and Annual Premiums for Whole Life Insurance, and Whole Life Annuity, First Payment at Once.</i>				<i>Valuation Columns.</i>		
x	a_x	A_x	P_x	k_x	u_x	Log. u_x
20	19.558	247.774	12.669	7.866	1.0482	.0204361
21	19.452	251.846	12.947	7.917	1.0482	.0204583
22	19.342	256.076	13.239	7.969	1.0483	.0204806
23	19.228	260.472	13.547	8.022	1.0483	.0205034
24	19.109	265.042	13.870	8.076	1.0484	.0205266
25	18.985	269.794	14.211	8.130	1.0485	.0205498
26	18.857	274.737	14.570	8.197	1.0485	.0205787
27	18.723	279.872	14.948	8.265	1.0486	.0206078
28	18.585	285.208	15.346	8.333	1.0487	.0206374
29	18.440	290.754	15.767	8.415	1.0488	.0206728
30	18.291	296.514	16.211	8.499	1.0488	.0207085
31	18.135	302.497	16.680	8.583	1.0489	.0207452
32	17.973	308.714	17.176	8.682	1.0490	.0207875
33	17.806	315.168	17.700	8.795	1.0491	.0208361
34	17.632	321.862	18.255	8.910	1.0493	.0208856
35	17.451	328.809	18.842	9.027	1.0494	.0209361
36	17.263	336.022	19.464	9.172	1.0495	.0209986
37	17.069	343.496	20.124	9.320	1.0497	.0210623
38	16.868	351.245	20.824	9.498	1.0499	.0211386
39	16.659	359.267	21.566	9.679	1.0501	.0212168
40	16.443	367.575	22.354	9.891	1.0503	.0213079
41	16.220	376.168	23.192	10.109	1.0505	.0214016
42	15.988	385.060	24.084	10.359	1.0508	.0215088
43	15.749	394.252	25.033	10.629	1.0511	.0216250
44	15.502	403.752	26.044	10.947	1.0514	.0217620
45	15.248	413.551	27.122	11.289	1.0517	.0219086
46	14.985	423.659	28.273	11.697	1.0522	.0220838
47	14.714	434.063	29.499	12.146	1.0526	.0222766
48	14.436	444.762	30.809	12.668	1.0532	.0225003
49	14.151	455.744	32.207	13.280	1.0538	.0227629
50	13.858	466.988	33.697	13.974	1.0545	.0230601
51	13.559	478.481	35.287	14.755	1.0553	.0233946
52	13.255	490.207	36.984	15.629	1.0563	.0237686
53	12.944	502.154	38.794	16.604	1.0573	.0241853
54	12.628	514.308	40.728	17.704	1.0584	.0246547
55	12.307	526.646	42.792	18.922	1.0597	.0251744
56	11.982	539.153	44.997	20.289	1.0611	.0257563
57	11.653	551.807	47.353	21.800	1.0627	.0263994
58	11.321	564.589	49.872	23.474	1.0644	.0271101
59	10.985	577.483	52.568	25.347	1.0663	.0279041
60	10.648	590.458	55.452	27.425	1.0685	.0287837
61	10.309	603.492	58.539	29.739	1.0709	.0297604
62	9.969	616.557	61.844	32.302	1.0736	.0308404
63	9.630	629.631	65.385	35.136	1.0765	.0320305
64	9.290	642.687	69.180	38.285	1.0798	.0333499

TABLE XX.
AMERICAN EXPERIENCE AND FOUR PER CENT.—Continued.

x	<i>Single and Annual Premiums for Whole Life Insurance, and Whole Life Annuity, First Payment at Once.</i>			<i>Valuation Columns.</i>		
	a_x	A_x	P_x	k_x	u_x	Log. u_x
65	8.952	655.699	73.248	41.807	1.0835	.0348203
66	8.616	668.629	77.607	45.704	1.0875	.0364423
67	8.282	681.452	82.279	50.031	1.0920	.0382356
68	7.952	694.137	87.286	54.855	1.0970	.0402259
69	7.627	706.647	92.649	60.178	1.1026	.0424121
70	7.307	718.961	98.393	66.090	1.1087	.0448271
71	6.993	731.046	104.543	72.576	1.1155	.0474616
72	6.685	742.891	111.130	79.602	1.1228	.0502970
73	6.383	754.505	118.208	87.167	1.1307	.0533295
74	6.086	765.916	125.845	95.323	1.1391	.0565756
75	5.794	777.159	134.136	104.204	1.1484	.0600829
76	5.505	788.265	143.188	113.971	1.1585	.0639071
77	5.219	799.257	153.135	124.941	1.1699	.0681631
78	4.936	810.141	164.119	137.433	1.1829	.0729589
79	4.656	820.909	176.296	151.720	1.1978	.0783803
80	4.380	831.554	189.870	168.861	1.2156	.0847961
81	4.108	841.988	204.949	188.502	1.2332	.0910332
82	3.842	852.232	221.821	211.089	1.2595	.1002095
83	3.580	862.326	240.904	236.952	1.2864	.1093861
84	3.318	872.367	262.887	268.004	1.3187	.1201538
85	3.057	882.409	288.618	308.133	1.3605	.1336851
86	2.799	892.349	318.816	361.806	1.4163	.1511485
87	2.548	902.006	354.032	434.762	1.4922	.1738134
88	2.310	911.168	394.519	530.070	1.5919	.2019150
89	2.085	919.817	441.222	655.254	1.7215	.2358979
90	1.867	928.179	497.077	833.333	1.9067	.2802748
91	1.654	936.396	566.277	1138.89	2.2244	.3472215
92	1.454	944.081	649.340	1734.18	2.8435	.4538601
93	1.291	950.362	736.310	2761.90	3.9124	.5924411
94	1.137	956.256	840.766	5999.99	7.2800	.8621334
95	1.000	961.538	961.538			

TABLE XXI.
INTEREST TABLES, THREE PER CENT.

Years.	Amount of One Dollar at End of n Years.	Present Value of One Dollar Due n Years Hence= v^n .	Amount of One Dollar Per Annum at End of n Years.	Present Value of One Dollar Per Annum for n Years.	Years.	Amount of One Dollar at End of n Years.	Present Value of One Dollar Due n Years Hence= v^n .	Amount of One Dollar Per Annum at End of n Years.	Present Value of One Dollar Per Annum for n Years.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	1.0300	.970874	1.0300	.9709	51	4.5154	.221463	120.6962	25.9512
2	1.0609	.942596	2.0909	1.9135	52	4.6509	.215013	125.3471	26.1662
3	1.0927	.915142	3.1836	2.8286	53	4.7904	.208750	130.1375	26.3750
4	1.1255	.888487	4.3091	3.7171	54	4.9341	.202670	135.0716	26.5777
5	1.1593	.862609	5.4684	4.5797	55	5.0821	.196767	140.1538	26.7744
6	1.1941	.837484	6.6625	5.4172	56	5.2346	.191036	145.3884	26.9655
7	1.2299	.813092	7.8923	6.2303	57	5.3917	.185472	150.7800	27.1509
8	1.2668	.789409	9.1591	7.0197	58	5.5534	.180070	156.3334	27.3310
9	1.3048	.766417	10.4639	7.7861	59	5.7200	.174825	162.0534	27.5058
10	1.3439	.744094	11.8078	8.5302	60	5.8916	.169733	167.9450	27.6756
11	1.3842	.722421	13.1920	9.2526	61	6.0684	.164789	174.0134	27.8404
12	1.4258	.701380	14.6178	9.9540	62	6.2504	.159990	180.2638	28.0003
13	1.4685	.680951	16.0863	10.6350	63	6.4379	.155330	186.7017	28.1557
14	1.5126	.661118	17.5989	11.2961	64	6.6311	.150806	193.3328	28.3065
15	1.5580	.641862	19.1569	11.9379	65	6.8300	.146413	200.1627	28.4529
16	1.6047	.623167	20.7616	12.5611	66	7.0349	.142149	207.1976	28.5950
17	1.6528	.605016	22.4144	13.1661	67	7.2459	.138009	214.4436	28.7330
18	1.7024	.587395	24.1169	13.7535	68	7.4633	.133989	221.9069	28.8670
19	1.7535	.570286	25.8704	14.3238	69	7.6872	.130086	229.5941	28.9971
20	1.8061	.553676	27.6765	14.8775	70	7.9178	.126297	237.5119	29.1234
21	1.8603	.537549	29.5368	15.4150	71	8.1554	.122619	245.6672	29.2460
22	1.9161	.521893	31.4529	15.9369	72	8.4000	.119047	254.0673	29.3651
23	1.9736	.506692	33.4265	16.4436	73	8.6520	.115580	262.7193	29.4807
24	2.0328	.491934	35.4593	16.9355	74	8.9116	.112214	271.6309	29.5929
25	2.0938	.477606	37.5530	17.4131	75	9.1789	.108945	280.8098	29.7018
26	2.1566	.463695	39.7096	17.8768	76	9.4543	.105772	290.2641	29.8076
27	2.2213	.450189	41.9309	18.3270	77	9.7379	.102691	300.0020	29.9103
28	2.2879	.437077	44.2189	18.7641	78	10.0301	.099700	310.0321	30.0100
29	2.3566	.424346	46.5754	19.1885	79	10.3310	.096796	320.3630	30.1068
30	2.4273	.411987	49.0027	19.6004	80	10.6409	.093977	331.0039	30.2008
31	2.5001	.399987	51.5028	20.0004	81	10.9601	.091240	341.9640	30.2920
32	2.5751	.388337	54.0778	20.3888	82	11.2889	.088582	353.2529	30.3806
33	2.6523	.377026	56.7302	20.7658	83	11.6276	.086002	364.8805	30.4666
34	2.7319	.366045	59.4621	21.1318	84	11.9764	.083497	376.8570	30.5501
35	2.8139	.355383	62.2759	21.4872	85	12.3357	.081065	389.1927	30.6312
36	2.8983	.345032	65.1742	21.8323	86	12.7058	.078704	401.8984	30.7099
37	2.9852	.334983	68.1594	22.1672	87	13.0870	.076412	414.9854	30.7863
38	3.0748	.325226	71.2342	22.4925	88	13.4796	.074186	428.4650	30.8605
39	3.1670	.315754	74.4013	22.8082	89	13.8839	.072026	442.3489	30.9325
40	3.2620	.306557	77.6633	23.1148	90	14.3005	.069928	456.6494	31.0024
41	3.3599	.297628	81.0232	23.4124	91	14.7295	.067891	471.3789	31.0703
42	3.4607	.288959	84.4839	23.7014	92	15.1714	.065914	486.5502	31.1362
43	3.5645	.280543	88.0484	23.9819	93	15.6265	.063994	502.1767	31.2002
44	3.6715	.272372	91.7199	24.2543	94	16.0953	.062130	518.2720	31.2623
45	3.7816	.264439	95.5015	24.5187	95	16.5782	.060320	534.8502	31.3227
46	3.8950	.256737	99.3965	24.7754	96	17.0755	.058563	551.9257	31.3812
47	4.0119	.249259	103.4084	25.0247	97	17.5878	.056858	569.5135	31.4381
48	4.1323	.241999	107.5406	25.2667	98	18.1154	.055202	587.6289	31.4933
49	4.2562	.234950	111.7969	25.5017					
50	4.3839	.228107	116.1808	25.7298					

TABLE XXII.

INTEREST TABLES, THREE AND ONE-HALF PER CENT.

Year.	Amount of One Dollar at End of n Years.	Present Value of One Dollar Due in Years Hence ^r .	Amount of One Dollar Per Annum at End of n Years.	Present Value of One Dollar Per Annum for n Years.	Year.	Amount of One Dollar at End of n Years.	Present Value of One Dollar Due in Years Hence ^r .	Amount of One Dollar Per Annum at End of n Years.	Present Value of One Dollar Per Annum for n Years.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	1.0350	.966184	1.0350	.9662	51	5.7804	.172998	141.3632	23.6286
2	1.0712	.933511	2.1062	1.8997	52	5.9827	.167148	147.3459	23.7957
3	1.1087	.901943	3.2149	2.8016	53	6.1921	.161496	153.5381	23.9572
4	1.1475	.871443	4.3625	3.6731	54	6.4088	.156035	159.9469	24.1133
5	1.1877	.841972	5.5502	4.5151	55	6.6331	.150758	166.5800	24.2640
6	1.2293	.813500	6.7794	5.3286	56	6.8653	.145660	173.4453	24.4097
7	1.2723	.785991	8.0517	6.1145	57	7.1056	.140734	180.5509	24.5504
8	1.3168	.759410	9.3685	6.8740	58	7.3543	.135975	187.9052	24.6864
9	1.3629	.733731	10.7314	7.6077	59	7.6117	.131377	195.5169	24.8178
10	1.4106	.708920	12.1420	8.3166	60	7.8781	.126934	203.3950	24.9447
11	1.4600	.684945	13.6020	9.0016	61	8.1538	.122642	211.5488	25.0674
12	1.5111	.661783	15.1131	9.6633	62	8.4392	.118495	219.9880	25.1858
13	1.5640	.639403	16.6770	10.3027	63	8.7346	.114487	228.7226	25.3003
14	1.6187	.617781	18.2957	10.9205	64	9.0403	.110616	237.7629	25.4110
15	1.6753	.596890	19.9710	11.5174	65	9.3567	.106875	247.1196	25.5178
16	1.7340	.576692	21.7050	12.0941	66	9.6842	.103261	256.8038	25.6211
17	1.7947	.557204	23.4997	12.6513	67	10.0231	.099769	266.8269	25.7209
18	1.8575	.538361	25.3572	13.1897	68	10.3739	.096395	277.2008	25.8173
19	1.9225	.520155	27.2797	13.7098	69	10.7370	.093136	287.9379	25.9104
20	1.9898	.502566	29.2695	14.2124	70	11.1128	.089986	299.0507	26.0004
21	2.0594	.485571	31.3289	14.6980	71	11.5018	.086943	310.5525	26.0873
22	2.1315	.469151	33.4604	15.1671	72	11.9043	.084003	322.4568	26.1713
23	2.2061	.453286	35.6665	15.6204	73	12.3210	.081162	334.7778	26.2525
24	2.2833	.437957	37.9499	16.0583	74	12.7522	.078418	347.5300	26.3309
25	2.3632	.423147	40.3131	16.4815	75	13.1985	.075766	360.7286	26.4067
26	2.4460	.408838	42.7591	16.8903	76	13.6605	.073204	374.3891	26.4799
27	2.5316	.395012	45.2907	17.2853	77	14.1386	.070728	388.5277	26.5506
28	2.6202	.381654	47.9108	17.6670	78	14.6335	.068337	403.1611	26.6189
29	2.7119	.368748	50.6227	18.0357	79	15.1456	.066026	418.3056	26.6850
30	2.8068	.356278	53.4295	18.3920	80	15.6757	.063793	433.9825	26.7488
31	2.9050	.344230	56.3345	18.7363	81	16.2244	.061636	450.2069	26.8104
32	3.0067	.332590	59.3412	19.0688	82	16.7923	.059551	466.9992	26.8700
33	3.1119	.321343	62.4532	19.3902	83	17.3800	.057538	484.3791	26.9275
34	3.2209	.310476	65.6740	19.7007	84	17.9883	.055592	502.3674	26.9831
35	3.3336	.299977	69.0076	20.0006	85	18.6179	.053712	520.9853	27.0368
36	3.4503	.289833	72.4579	20.2905	86	19.2695	.051896	540.2547	27.0887
37	3.5710	.280032	76.0289	20.5705	87	19.9439	.050141	560.1987	27.1388
38	3.6960	.270562	79.7249	20.8411	88	20.6420	.048445	580.8406	27.1873
39	3.8254	.261413	83.5503	21.1025	89	21.3644	.046807	602.2050	27.2341
40	3.9593	.252572	87.5096	21.3551	90	22.1122	.045224	624.3172	27.2793
41	4.0978	.244031	91.6074	21.5991	91	22.8861	.043695	647.2033	27.3230
42	4.2413	.235779	95.8487	21.8349	92	23.6871	.042217	670.8904	27.3652
43	4.3897	.227806	100.2384	22.0627	93	24.5162	.040789	695.4066	27.4060
44	4.5433	.220102	104.7817	22.2828	94	25.3742	.039410	720.7808	27.4454
45	4.7024	.212659	109.4840	22.4954	95	26.2623	.038077	747.0431	27.4835
46	4.8669	.205468	114.3510	22.7009	96	27.1816	.036790	774.2247	27.5203
47	5.0373	.198520	119.3883	22.8994	97	28.1329	.035546	802.3575	27.5558
48	5.2136	.191806	124.6018	23.0912	98	29.1175	.034344	831.4750	27.5902
49	5.3961	.185320	129.9979	23.2765					
50	5.5849	.179053	135.5828	23.4556					

TABLE XXIII.
INTEREST TABLES, FOUR PER CENT.

Years.	Amount of One Dollar at End of n Years.	Present Value of One Dollar Due n Years Hence— v^n .	Amount of One Dollar Per Annum at End of n Years.	Present Value Per Annum for n Years.	Years.	Amount of One Dollar at End of n Years.	Present Value of One Dollar Due n Years Hence— v^n .	Amount of One Dollar Per Annum at End of n Years.	Present Value Per Annum for n Years.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	1.0400	.961538	1.0400	.9615	51	7.3910	.135301	166.1647	21.6175
2	1.0816	.924556	2.1216	1.8861	52	7.6866	.130097	173.8513	21.7476
3	1.1249	.888996	3.2465	2.7751	53	7.9941	.125093	181.8454	21.8727
4	1.1699	.854804	4.4163	3.6299	54	8.3138	.120282	190.1592	21.9930
5	1.2167	.821927	5.6330	4.4518	55	8.6464	.115656	198.8055	22.1086
6	1.2653	.790315	6.8983	5.2421	56	8.9922	.111207	207.7978	22.2198
7	1.3159	.759918	8.2142	6.0021	57	9.3519	.106930	217.1497	22.3267
8	1.3686	.730690	9.5828	6.7327	58	9.7260	.102817	226.8757	22.4296
9	1.4233	.702587	11.0061	7.4353	59	10.1150	.098863	236.9907	22.5284
10	1.4802	.675564	12.4864	8.1109	60	10.5196	.095060	247.5103	22.6235
11	1.5395	.649581	14.0258	8.7605	61	10.9404	.091404	258.4507	22.7149
12	1.6010	.624597	15.6268	9.3851	62	11.3780	.087889	269.8288	22.8028
13	1.6651	.600574	17.2919	9.9856	63	11.8332	.084508	281.6619	22.8873
14	1.7317	.577475	19.0236	10.5631	64	12.3065	.081258	293.9684	22.9685
15	1.8009	.555265	20.8245	11.1184	65	12.7987	.078133	306.7671	23.0467
16	1.8730	.533908	22.6975	11.6523	66	13.3107	.075128	320.0778	23.1218
17	1.9479	.513373	24.6454	12.1657	67	13.8431	.072238	333.9209	23.1940
18	2.0258	.493628	26.6712	12.6593	68	14.3968	.069460	348.3177	23.2635
19	2.1068	.474642	28.7781	13.1339	69	14.9727	.066788	363.2905	23.3303
20	2.1911	.456387	30.9692	13.5903	70	15.5716	.064219	378.8621	23.3945
21	2.2788	.438834	33.2480	14.0292	71	16.1945	.061749	395.0566	23.4563
22	2.3699	.421955	35.6179	14.4511	72	16.8423	.059374	411.8988	23.5156
23	2.4647	.405726	38.0826	14.8568	73	17.5160	.057091	429.4148	23.5727
24	2.5633	.390121	40.6459	15.2470	74	18.2166	.054895	447.6314	23.6276
25	2.6658	.375117	43.3117	15.6221	75	18.9453	.052784	466.5766	23.6804
26	2.7725	.360689	46.0842	15.9828	76	19.7031	.050754	486.2797	23.7312
27	2.8834	.346817	48.9676	16.3296	77	20.4912	.048801	506.7709	23.7800
28	2.9987	.333477	51.9663	16.6631	78	21.3108	.046924	528.0817	23.8269
29	3.1187	.320651	55.0849	16.9837	79	22.1633	.045120	550.2450	23.8720
30	3.2434	.308319	58.3283	17.2920	80	23.0498	.043384	573.2948	23.9154
31	3.3731	.296460	61.7015	17.5885	81	23.9718	.041716	597.2666	23.9571
32	3.5081	.285058	65.2095	17.8736	82	24.9307	.040111	622.1972	23.9972
33	3.6484	.274094	68.8579	18.1476	83	25.9279	.038569	648.1251	24.0358
34	3.7943	.263552	72.6522	18.4112	84	26.9650	.037085	675.0901	24.0729
35	3.9461	.253415	76.5983	18.6646	85	28.0436	.035659	703.1337	24.1085
36	4.1039	.243669	80.7022	18.9083	86	29.1653	.034287	732.2991	24.1428
37	4.2681	.234297	84.9703	19.1426	87	30.3320	.032969	762.6310	24.1758
38	4.4388	.225285	89.4091	19.3679	88	31.5452	.031701	794.1763	24.2075
39	4.6164	.216621	94.0255	19.5845	89	32.8071	.030481	826.9833	24.2380
40	4.8010	.208289	98.8265	19.7928	90	34.1193	.029309	861.1027	24.2673
41	4.9931	.200278	103.8196	19.9931	91	35.4841	.028182	896.5868	24.2955
42	5.1928	.192575	109.0124	20.1856	92	36.9035	.027098	933.4902	24.3226
43	5.4005	.185168	114.4129	20.3708	93	38.3796	.026056	971.8699	24.3486
44	5.6165	.178046	120.0294	20.5488	94	39.9148	.025053	1011.7846	24.3737
45	5.8412	.171198	125.8706	20.7200	95	41.5114	.024090	1053.2960	24.3978
46	6.0748	.164614	131.9454	20.8847	96	43.1718	.023163	1096.4679	24.4209
47	6.3178	.158283	138.2632	21.0429	97	44.8987	.022272	1141.3666	24.4432
48	6.5705	.152195	144.8337	21.1951	98	46.6947	.021416	1188.0613	24.4646
49	6.8333	.146341	151.6671	21.3415					
50	7.1067	.140713	158.7738	21.4822					

COMBINED MORTALITY AND DISABILITY TABLE XXIV.

National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent Disability Experience.

Age	q_x	i_x	$\log. i_x$	q'_x
18	.00500	.00012	4.07918	.00512
19	.00500	.00012	.07918	.00512
20	.00500	.00012	.07918	.00512
21	.00504	.00013	.11394	.00517
22	.00507	.00015	.17609	.00522
23	.00511	.00018	.25527	.00529
24	.00515	.00021	.32222	.00536
25	.00520	.00025	.39794	.00545
26	.00526	.00029	.46240	.00555
27	.00532	.00032	.50515	.00564
28	.00539	.00034	.53148	.00573
29	.00547	.00035	.54407	.00582
30	.00555	.00037	.56820	.00592
31	.00565	.00038	.57978	.00603
32	.00575	.00039	.59106	.00614
33	.00587	.00041	.61278	.00628
34	.00600	.00044	.64345	.00644
35	.00615	.00048	.68124	.00663
36	.00631	.00052	.71600	.00683
37	.00649	.00056	.74819	.00705
38	.00670	.00061	.78533	.00731
39	.00692	.00065	.81291	.00757
40	.00717	.00069	.83885	.00786
41	.00745	.00073	.86332	.00818
42	.00777	.00077	.88649	.00854
43	.00811	.00082	.91381	.00893
44	.00848	.00086	.93450	.00934
45	.00887	.00090	.95424	.00977
46	.00929	.00094	.97313	.01023
47	.00975	.00099	.99564	.01074
48	.01027	.00105	3.02119	.01132
49	.01082	.00113	.05308	.01195
50	.01144	.00124	.09342	.01268
51	.01215	.00139	.14301	.01354
52	.01290	.00157	.19590	.01447
53	.01375	.00179	.25285	.01554
54	.01468	.00210	.32222	.01678
55	.01571	.00255	.40654	.01826
56	.01686	.00321	.50651	.02007
57	.01812	.00407	.60959	.02219
58	.01950	.00504	.70243	.02454
59	.02105	.00646	.91023	.02751
60	.02275	.00830	.01908	.03105
61	.02464	.01035	2.01494	.03499
62	.02672	.01290	.11059	.03962
63	.02903	.01645	.21617	.04548
64	.03157	.02200	.34242	.05357
65	.03439	.02955	.47056	.06394
66	.03752	.04010	.60314	.07762
67	.04096	.05465	.73759	.09561
68	.04478	.07420	.87040	.11898
69	.04898	.09975	.99891	.14873
70	.05365	.13230	1.12156	.18595
71	.05881	.17285	.23767	.23166
72	.06449	.22240	.34713	.28689
73	.07081	.28195	.45017	.35276
74	.07778	.35250	.54716	.43028
75	.08548	.43505	.63854	.52053
76	.09399	.52060	.71650	.61459
77	.10340	.62015	.79250	.72355
78	.11384	.73470	.86611	.84854
79	.12535	.85345	.93118	1.00000

i_x = Probability of becoming totally and permanently disabled.

$q'_x = i_x + q_x$ (N. F. C.). Not the Actuarial Society notation. See text.

COMBINED MORTALITY AND DISABILITY TABLE XXV.

National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent Disability Experience.

Age	$^a l_x$	log. $^a l_x$	d_x^I	log. d_x^I	l_x	log. l_x
18	100000	5.00000	512	2.70927	12	1.07918
19	99488	4.99777	509	.70672	12	.07695
20	98979	.99554	507	.70501	12	.07472
21	98472	.99331	509	.70672	13	.10725
22	97963	.99106	511	.70842	15	.16715
23	97452	.98879	516	.71265	18	.24406
24	96936	.98649	520	.71600	20	.30871
25	96416	.98415	525	.72016	24	.38209
26	95891	.98178	532	.72591	28	.44418
27	95359	.97936	538	.73078	31	.48451
28	94821	.97690	543	.73480	32	.50838
29	94278	.97441	549	.73957	33	.51848
30	93729	.97187	555	.74429	35	.54007
31	93174	.96929	562	.74974	35	.54907
32	92612	.96667	569	.75511	36	.55773
33	92043	.96399	578	.76193	38	.57677
34	91465	.96125	589	.77012	40	.60470
35	90876	.95845	603	.78032	44	.63969
36	90273	.95556	617	.79029	47	.67156
37	89656	.95258	632	.80072	50	.70077
38	89024	.94951	651	.81358	54	.73484
39	88373	.94632	669	.82543	57	.75923
40	87704	.94302	689	.83022	61	.78187
41	87015	.93959	712	.85248	64	.80291
42	86303	.93603	737	.86747	66	.82252
43	85566	.93230	764	.88309	70	.84611
44	84802	.92841	792	.89873	73	.86291
45	84010	.92433	821	.91434	76	.87857
46	83189	.92007	851	.92993	78	.89320
47	82338	.91560	884	.94645	82	.91124
48	81454	.91091	922	.96473	86	.93210
49	80532	.90597	962	.98318	91	.95905
50	79570	.90075	1009	3.00389	99	.99417
51	78561	.89521	1064	.02694	109	2.03822
52	77497	.88928	1121	.04961	122	.08518
53	76376	.88296	1187	.07445	137	.13581
54	75189	.87615	1262	.10106	158	.19837
55	73927	.86880	1350	.13033	189	.27534
56	72577	.86080	1457	.16346	233	.36731
57	71120	.85199	1578	.19811	289	.46158
58	69542	.84225	1707	.23223	351	.54468
59	67835	.83145	1866	.27091	438	.64168
60	65969	.81934	2048	.31133	548	.73842
61	63921	.80564	2237	.34967	662	.82058
62	61684	.79017	2444	.38810	796	.90076
63	59240	.77262	2694	.43040	975	.98879
64	56546	.75240	3029	.48130	1244	3.09482
65	53517	.72849	3422	.53428	1581	.19905
66	50095	.69979	3888	.58973	2009	.30293
67	46207	.66471	4418	.64523	2525	.40230
68	41789	.62106	4973	.69662	3101	.49157
69	36816	.56604	5475	.73838	3672	.56495
70	31341	.49611	5829	.76559	4146	.61767
71	25512	.40674	5911	.77166	4410	.64441
72	19601	.29228	5624	.75005	4359	.63941
73	13977	.14541	4931	.69294	3941	.59558
74	9046	3.95646	3890	.58995	3189	.50362
75	5156	.71231	2686	.42911	2243	.35085
76	2470	.39270	1519	.18156	1286	.10920
77	951	2.97818	689	2.83822	590	2.77068
78	262	.41830	222	.34635	193	.28441
79	40	1.60206	40	1.60206	34	1.53324

$^a l_x$ = Active, or premium paying members.

d_x^I = $^a l_x - ^a l_{x+1}$, number dying and number totally and permanently disabled at age x out of the $^a l_x$ persons.

$l_x = ^a l_x \times i_x$.

COMMUTATION COLUMNS—TABLE XXVI.
(Death Benefit or Total and Permanent Disability Benefit.)

National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent Disability Experience and 4 per cent.

Age	$\bullet D_x$	$\bullet N_x$	C'_x	M'_x
18	49363	994246	243.02	11122.59
19	47222	944883	232.30	10879.57
20	45172	897661	222.49	10647.27
21	43213	852489	214.78	10424.78
22	41336	809276	207.32	10210.00
23	39538	767940	201.30	10002.68
24	37817	728402	195.06	9801.38
25	36168	690585	189.36	9606.32
26	34587	654417	184.51	9416.96
27	33072	619830	179.41	9232.45
28	31621	586758	174.11	9053.04
29	30230	555137	169.27	8878.93
30	28898	524907	164.54	8709.66
31	27622	496009	160.20	8545.12
32	26400	468387	155.96	8384.92
33	25228	441987	152.34	8228.96
34	24106	416759	149.26	8076.62
35	23029	392653	146.93	7927.36
36	21997	369624	144.56	7780.43
37	21006	347627	142.38	7635.87
38	20056	326621	141.02	7493.49
39	19143	306565	139.35	7352.47
40	18268	287422	137.99	7213.12
41	17427	269154	137.11	7075.13
42	16620	251727	136.47	6938.02
43	15844	235107	136.03	6801.55
44	15099	219263	135.59	6665.52
45	14382	204164	135.15	6529.93
46	13694	189782	134.70	6394.78
47	13033	176088	134.54	6260.08
48	12397	163055	134.93	6125.54
49	11785	150658	135.37	5990.61
50	11196	138873	136.51	5855.24
51	10629	127677	138.42	5718.73
52	10082	117048	140.23	5580.31
53	9554.1	106966	142.77	5440.08
54	9043.8	97411.9	145.96	5297.31
55	8550.1	88368.1	150.13	5151.35
56	8071.0	79818.0	155.80	5001.22
57	7604.8	71747.0	162.25	4845.42
58	7150.2	64142.2	168.76	4683.17
59	6706.3	56992.0	177.38	4514.41
60	6271.0	50285.7	187.20	4337.03
61	5842.7	44014.7	196.61	4149.83
62	5421.3	38172.0	206.54	3953.22
63	5006.3	32750.7	218.91	3746.68
64	4594.8	27744.4	236.66	3527.77
65	4181.4	23149.6	257.09	3291.11
66	3763.5	18968.2	280.87	3034.02
67	3338.0	15204.7	306.87	2753.15
68	2903.4	11866.7	332.14	2446.28
69	2458.9	8963.3	351.60	2114.14
70	2012.7	6504.4	359.93	1762.54
71	1575.3	4491.75	350.96	1402.61
72	1163.8	2916.45	321.09	1051.65
73	797.96	1752.55	270.69	730.56
74	496.58	954.59	205.33	459.87
75	272.15	458.01	136.33	254.54
76	125.36	185.86	74.129	118.212
77	46.41	60.509	32.331	44.083
78	12.294	14.099	10.017	11.752
79	1.805	1.805	1.735	1.735

$$\bullet D_x = v^{x+1}d'_x$$

$$\bullet N_x = \Sigma \bullet D_x$$

$$C'_x = v^{x+1}d'_x$$

$$M'_x = \Sigma C'_x$$

COMMUTATION COLUMNS—TABLE XXVII.
(Death Benefit or Total and Permanent Disability Benefit.)

National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent Disability Experience and 4 per cent.

Age	${}^aD_x^{12}$	${}^aN_x^{12}$	C_x^{12}	M_x^{12}
18	48292.5	969564	247.83	11343.25
19	46197.0	921272	236.90	11095.42
20	44192.5	875075	226.90	10858.52
21	42274.5	830882	219.03	10631.62
22	40437.0	788608	211.43	10412.59
23	38677.5	748171	205.29	10201.16
24	36992.5	709493	198.93	9995.87
25	35377.5	672500	193.11	9796.94
26	33829.5	637123	188.16	9603.83
27	32346.5	603294	182.97	9415.67
28	30925.5	570947	177.56	9232.70
29	29564.0	540022	172.62	9055.14
30	28260.0	510458	167.80	8882.22
31	27011.0	482198	163.38	8714.42
32	25814.0	455187	159.05	8551.04
33	24667.0	429373	155.35	8391.99
34	23567.5	404706	152.22	8236.64
35	22513.0	381138	149.84	8084.42
36	21501.5	358625	147.43	7934.58
37	20531.0	337124	145.20	7787.15
38	19599.5	316593	143.81	7641.95
39	18705.5	296993	142.11	7498.14
40	17847.5	278288	140.72	7356.03
41	17023.5	260440	139.83	7215.31
42	16232.0	243417	139.17	7075.48
43	15471.5	227185	138.72	6936.31
44	14740.5	211713	138.28	6797.59
45	14038.0	196973	137.83	6659.31
46	13363.5	182935	137.37	6521.48
47	12715.0	169571	137.21	6384.11
48	12091.0	156856	137.60	6246.90
49	11490.5	144765	138.05	6109.30
50	10912.5	133275	139.22	5971.25
51	10355.5	122363	141.17	5832.03
52	9818.05	112007	143.01	5690.86
53	9298.95	102189	145.60	5547.85
54	8796.95	92890	148.85	5402.25
55	8310.55	84093	153.10	5253.40
56	7837.90	75782.5	158.88	5100.30
57	7377.50	67944.6	165.46	4941.42
58	6928.25	60567.1	172.10	4775.96
59	6488.65	53638.8	180.90	4603.86
60	6056.85	47150.2	190.91	4422.96
61	5632.60	41093.3	200.50	4232.05
62	5213.80	35461.3	210.63	4031.55
63	4800.55	30247.5	223.25	3820.92
64	4388.10	25446.0	241.35	3597.67
65	3972.45	21058.9	262.18	3356.32
66	3550.75	17086.4	286.43	3094.14
67	3120.70	13535.7	312.95	2807.71
68	2681.15	10415.0	338.72	2494.76
69	2235.80	7733.81	358.57	2156.04
70	1794.00	5498.01	367.06	1797.47
71	1369.55	3704.01	357.92	1430.41
72	980.88	2334.46	327.45	1072.49
73	647.27	1353.58	276.05	745.04
74	384.365	706.308	209.40	468.99
75	198.755	321.943	139.03	259.59
76	85.885	123.188	75.598	120.555
77	29.352	37.303	32.972	44.957
78	7.049	7.951	10.215	11.985
79	.902	.902	1.770	1.770

$$C_x^{12} = v^{x+1} d_x'$$

$$M_x^{12} = \sum C_x^{12}$$

$${}^aD_x^{12} = \frac{{}^aD_x + {}^aD_{x+1}}{2}$$

$${}^aN_x^{12} = \sum {}^aD_x^{12}$$

COMMUTATION COLUMNS—TABLE XXVIII.

(Total and Permanent Disability Benefit not in Combination with a Death Benefit.)
 National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent
 Disability Experience and 4 per cent.

Age	1C_x	log. 1C_x	1M_x	log. 1M_x
18	5.70	0.75555	3151.95	3.49859
19	5.45	.73628	3146.25	.49780
20	5.21	.71702	3140.80	.49704
21	5.40	.73252	3135.59	.49632
22	5.96	.77538	3130.19	.49557
23	6.84	.83526	3124.23	.49474
24	7.64	.88288	3117.39	.49379
25	8.69	.93922	3109.75	.49273
26	9.65	.98428	3101.06	.49152
27	10.18	1.00758	3091.41	.49016
28	10.34	.01441	3081.23	.48872
29	10.17	.00748	3070.89	.48727
30	10.28	.01204	3060.72	.48582
31	10.09	.00400	3050.44	.48436
32	9.90	0.99563	3040.35	.48293
33	9.95	.99764	3030.45	.48151
34	10.20	1.00853	3020.50	.48008
35	10.63	.02649	3010.30	.47861
36	11.00	.04133	2999.67	.47708
37	11.31	.05350	2988.67	.47548
38	11.76	.07054	2977.36	.47384
39	11.97	.07790	2965.60	.47211
40	12.12	.08350	2953.63	.47035
41	12.23	.08751	2941.51	.46857
42	12.31	.09009	2929.28	.46676
43	12.49	.09664	2916.97	.46494
44	12.49	.09641	2904.48	.46307
45	12.45	.09504	2891.99	.46120
46	12.38	.09263	2879.54	.45932
47	12.41	.09364	2867.16	.45746
48	12.52	.09747	2854.75	.45558
49	12.81	.10738	2842.23	.45365
50	13.35	.12547	2829.42	.45169
51	14.21	.15249	2816.07	.44965
52	15.22	.18241	2801.86	.44745
53	16.44	.21601	2786.64	.44507
54	18.26	.26154	2770.20	.44251
55	20.97	.32147	2751.94	.43963
56	24.91	.39641	2730.97	.43632
57	29.77	.47365	2706.06	.43234
58	34.65	.53971	2676.29	.42753
59	41.66	.61968	2641.64	.42187
60	50.05	.69939	2599.98	.41487
61	58.14	.76451	2549.93	.40652
62	67.25	.82766	2491.79	.39651
63	79.20	.89866	2424.54	.38462
64	97.21	.98765	2345.34	.37020
65	118.81	2.07485	2248.13	.35182
66	145.11	.16170	2129.32	.32824
67	175.40	.24403	1984.21	.29759
68	207.14	.31627	1808.81	.25739
69	235.84	.37262	1601.67	.20458
70	256.04	.40830	1365.83	.13539
71	261.82	.41801	1109.79	.04524
72	248.88	.39598	847.97	2.92838
73	216.33	.33511	599.09	.77749
74	168.31	.22612	382.76	.58293
75	113.85	.05632	214.45	.33133
76	62.75	1.79763	100.60	.00260
77	27.68	.44208	37.85	1.57807
78	8.69	0.93878	10.17	.00732
79	1.48	.17057	1.48	0.17026

$${}^1C_x = v^{x+1} \cdot i_x.$$

$${}^1M_x = \sum {}^1C_x.$$

COMMUTATION COLUMNS—LOGARITHMS—TABLE XXIX.

(Death Benefit or Total and Permanent Disability Benefit.)

National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent Disability Experience and 4 Per Cent.

Age.	log. aD_x	log. $^aD_x^{12}$	log. aN_x	log. $^aN_x^{12}$	log. C'_x	log. M'_x
18	4.69340	4.68388	5.99750	5.98657	2.38564	4.04622
19	.67414	.66461	.97538	.96439	.36605	.03663
20	.65487	.64535	.95311	.94204	.34731	.02723
21	.63561	.62608	.93069	.91954	.33199	.01808
22	.61633	.60678	.90810	.89636	.31665	.00903
23	.59702	.58746	.88533	.87400	.30585	.00013
24	.57760	.56812	.86237	.85095	.29017	3.99129
25	.55832	.54873	.83921	.82769	.27729	.98256
26	.53891	.52930	.81586	.80422	.26601	.97391
27	.51946	.50983	.79227	.78053	.25385	.96532
28	.49997	.49032	.76846	.75660	.24083	.95679
29	.48044	.47076	.74440	.73241	.22857	.94836
30	.46087	.45117	.72008	.70796	.21626	.94000
31	.44126	.43154	.69549	.68323	.20467	.93172
32	.42160	.41186	.67061	.65819	.19301	.92350
33	.40189	.39212	.64541	.63283	.18280	.91535
34	.38212	.37232	.61989	.60714	.17395	.90723
35	.36228	.35243	.59401	.58108	.16712	.89913
36	.34236	.33248	.56776	.55465	.16006	.89100
37	.32235	.31241	.54112	.52778	.15345	.88286
38	.30224	.29226	.51404	.50050	.14928	.87468
39	.28202	.27198	.48652	.47274	.14410	.86644
40	.26169	.25159	.45852	.44450	.13985	.85812
41	.24122	.23106	.42999	.41571	.13708	.84973
42	.22063	.21037	.40094	.38636	.13504	.84123
43	.19987	.18955	.37127	.35637	.13362	.83261
44	.17894	.16853	.34096	.32574	.13223	.82383
45	.15783	.14731	.30997	.29440	.13081	.81491
46	.13654	.12594	.27825	.26228	.12936	.80583
47	.11503	.10432	.24573	.22935	.12885	.79658
48	.09331	.08246	.21232	.19551	.13010	.78714
49	.07134	.06036	.17800	.16062	.13151	.77747
50	.04908	.03794	.14261	.12473	.13519	.76754
51	.02651	.01519	.10612	.08764	.14121	.75730
52	.00355	3.99203	.06837	.04926	.14684	.74666
53	3.98019	.96844	.02926	.00941	.15455	.73561
54	.95635	.94433	4.98861	4.96797	.16423	.72405
55	.93197	.91963	.94630	.92476	.17646	.71193
56	.90693	.89420	.90210	.87957	.19256	.69907
57	.88109	.86791	.85580	.83216	.21018	.68533
58	.85432	.84063	.80714	.78224	.22726	.67054
59	.82648	.81216	.75581	.72948	.24891	.65460
60	.79734	.78225	.70145	.67348	.27230	.63719
61	.76661	.75066	.64360	.61377	.29360	.61803
62	.73410	.71715	.58174	.54975	.31500	.59695
63	.69952	.68130	.51522	.48070	.34027	.57365
64	.66227	.64228	.44317	.40564	.37413	.54750
65	.62132	.59906	.36455	.32344	.41008	.51734
66	.57559	.55033	.27802	.23264	.44850	.48202
67	.52348	.49425	.18199	.13149	.48696	.43984
68	.46290	.42833	.07434	.01766	.52132	.38851
69	.39074	.34943	3.95247	3.88839	.54605	.32513
70	.30378	.25382	.81321	.74020	.55622	.24613
71	.19737	.13659	.65241	.56867	.54526	.14693
72	.06588	2.99162	.46485	.36819	.50662	.02189
73	2.90198	.81109	.24368	.13149	.43247	2.86366
74	.69599	.58475	2.97982	2.84900	.31245	.66264
75	.43481	.29833	.66088	.50777	.13458	.40576
76	.09817	1.93392	.26921	.09058	1.86999	.07265
77	1.66661	.46764	1.78182	1.57174	.50962	1.64427
78	.08970	0.84813	.14919	0.90042	.00072	.07011
79	.25643	1.95521	0.25648	1.95521	0.23939	0.23930

$^aD_x = v^{x+1}d_x$

$^aN_x = \sum ^aD_x$

$C'_x = v^{x+1}d'_x$

$^aD_x^{12} = \frac{^aD_x + ^aD_{x+1}}{2}$

$^aN_x^{12} = \sum ^aD_x^{12}$

$M'_x = \sum C'_x$

TABLE XXX.

ANNUITIES, SINGLE PREMIUMS AND ANNUAL PREMIUMS.

National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent Disability Experience and 4 Per Cent.

		Value of annuity of \$1.00 payable by monthly instalments		Single Premium to insure \$1,000 at death or disability claims monthly		Annual Premium payable by monthly instalments to insure \$1,000 at death or disability
Age.	log. $\cdot a_x^{12}$	$\cdot a_x^{12}$	log. $\cdot A_x^{12}$	$\cdot A_x^{12}$	log. $\cdot P_x^{12}$	$\cdot P_x^{12}$
18	1.29317	19.64	2.36133	229.79	1.06816	11.70
19	.29025	19.51	.37099	234.96	.08074	12.04
20	.28717	19.37	.38092	240.39	.09375	12.41
21	.28393	19.23	.39101	246.04	.10708	12.80
22	.28053	19.08	.40125	251.91	.12072	13.20
23	.27698	18.92	.41162	258.00	.13464	13.64
24	.27326	18.76	.42213	264.32	.14887	14.09
25	.26937	18.59	.43277	270.88	.16340	14.57
26	.26531	18.42	.44353	277.67	.17822	15.07
27	.26107	18.24	.45439	284.70	.19332	15.61
28	.25663	18.06	.46536	291.98	.20873	16.17
29	.25197	17.86	.47645	299.54	.22448	16.77
30	.24709	17.66	.48765	307.36	.24056	17.40
31	.24197	17.46	.49898	315.49	.25701	18.07
32	.23659	17.24	.51042	323.91	.27383	18.79
33	.23094	17.02	.52198	332.64	.29104	19.55
34	.22502	16.79	.53363	341.69	.30861	20.35
35	.21880	16.55	.54537	351.05	.32657	21.21
36	.21229	16.30	.55717	360.72	.34488	22.13
37	.20543	16.05	.56903	370.71	.36360	23.10
38	.19826	15.79	.58096	381.03	.38270	24.14
39	.19072	15.51	.59293	391.68	.40221	25.25
40	.18281	15.23	.60495	402.67	.42214	26.43
41	.17449	14.95	.61703	414.03	.44254	27.70
42	.16573	14.65	.62913	425.73	.46340	29.07
43	.15650	14.34	.64126	437.78	.48476	30.53
44	.14680	14.02	.65342	450.22	.50662	32.11
45	.13657	13.70	.66560	463.02	.52903	33.81
46	.12574	13.36	.67781	476.22	.55207	35.65
47	.11432	13.01	.69007	489.86	.57575	37.65
48	.10220	12.65	.70235	503.91	.60015	39.82
49	.08934	12.28	.71465	518.38	.62531	42.20
50	.07565	11.90	.72698	533.31	.65133	44.81
51	.06113	11.51	.73931	548.67	.67818	47.66
52	.04571	11.11	.75163	564.46	.70592	50.81
53	.02922	10.70	.76393	580.67	.73471	54.29
54	.01162	10.27	.77622	597.34	.76460	58.16
55	0.99279	9.84	.78847	614.43	.79568	62.47
56	.97264	9.39	.80067	631.93	.82803	67.30
57	.95107	8.94	.81276	649.77	.86169	72.73
58	.92792	8.47	.82474	667.94	.89682	78.85
59	.90300	8.00	.83665	686.52	.93365	85.83
60	.87614	7.52	.84838	705.31	.97224	93.81

TABLE XXX.

ANNUITIES, SINGLE PREMIUMS AND ANNUAL PREMIUMS—Continued.

National Fraternal Congress Table of Mortality and Fraternal Society Total and Permanent Disability Experience and 4 Per Cent—Continued.

Age.	$\log. {}^a a_x^{12}$	${}^a a_x^{12}$	$\log. {}^a A_x^{12}$	${}^a A_x^{12}$	$\log. {}^a P_x^{12}$	${}^a P_x^{12}$
		Value of annuity of \$1.00 payable by monthly installments		Single Premium to insure \$1,000 at death or disability claims monthly		Annual Premium payable by monthly installments to insure \$1,000 at death or disability
61	.84716	7.03	.85994	724.34	2.01278	102.99
62	.81565	6.54	.87137	743.65	.05572	113.69
63	.78118	6.04	.88265	763.22	.10147	126.32
64	.74337	5.54	.89375	782.98	.15038	141.38
65	.70212	5.04	.90454	802.68	.20242	159.37
66	.65705	4.54	.91494	822.13	.25789	181.09
67	.60801	4.06	.92487	841.14	.31686	207.42
68	.55476	3.59	.93414	859.29	.37938	239.54
69	.49765	3.15	.94291	876.82	.44526	278.78
70	.43642	2.73	.95089	893.08	.51447	326.94
71	.37130	2.35	.95809	908.01	.58679	386.18
72	.30231	2.01	.96452	921.55	.66221	459.42
73	.22951	1.70	.97020	933.68	.74069	550.41
74	.15301	1.42	.97517	944.43	.82216	663.99
75	.07296	1.18	.97948	953.85	.90652	806.34
76	1.99241	.98	.98303	961.68	.99062	978.63
77	.90513	.80	.98619	968.70	3.08106	1205.20
78	.81072	.65	.98894	974.85	.17822	1507.40
79	.69878	.50	.99154	980.71	.29276	1962.30

TABLE XXXI.
FRATERNAL DEATH AND DISABILITY EXPERIENCE.

Age.	l_x	d_x	p_x	q_x	l_x^{aa}	d_x^{aa}	p_x^{aa}	q_x^{aa}
20	100000	500	.9950000	.0050000	100000	498	.994904	.004976
21	99500	501	.9949648	.0050352	99490	492	.994923	.004947
22	98999	502	.9949292	.0050708	98982	498	.994823	.005027
23	98497	503	.9948932	.0051068	98473	494	.994805	.005015
24	97994	505	.9948466	.0051534	97961	499	.994696	.005094
25	97489	507	.9947994	.0052006	97446	494	.994677	.005073
26	96982	510	.9947413	.0052587	96927	500	.994549	.005161
27	96472	513	.9946824	.0053176	96403	496	.994540	.005140
28	95959	517	.9946123	.0053877	95875	500	.994440	.005220
29	95442	522	.9945307	.0054693	95343	505	.994349	.005301
30	94920	527	.9944480	.0055520	94807	510	.994260	.005380
31	94393	533	.9943534	.0056466	94266	506	.994249	.005371
32	93860	540	.9942468	.0057532	93720	520	.994059	.005551
33	93320	548	.9941277	.0058723	93167	525	.993950	.005640
34	92772	557	.9939960	.0060040	92606	530	.993842	.005718
35	92215	567	.9938513	.0061487	92035	534	.993714	.005806
36	91648	578	.9936933	.0063067	91452	547	.993496	.005984
37	91070	591	.9935105	.0064895	90857	559	.993288	.006152
38	90479	606	.9933023	.0066977	90248	571	.993061	.006329
39	89873	622	.9930791	.0069209	89622	582	.992853	.006497
40	89251	640	.9928292	.0071708	88979	603	.992535	.006775
41	88611	660	.9925517	.0074483	88317	613	.992328	.006942
42	87951	683	.9922343	.0077657	87636	641	.991920	.007310
43	87268	708	.9918871	.0081129	86931	659	.991603	.007577
44	86560	734	.9915203	.0084797	86200	685	.991195	.007945
45	85826	761	.9911332	.0088668	85443	710	.990787	.008313
46	85065	790	.9907130	.0092870	84659	734	.990390	.008670
47	84275	822	.9902462	.0097538	83846	766	.989873	.009137
48	83453	857	.9897307	.0102693	83001	796	.989357	.009593
49	82596	894	.9891762	.0108238	82120	826	.988812	.010058
50	81702	935	.9885560	.0114440	81200	862	.988149	.010611
51	80767	981	.9878540	.0121460	80234	903	.987358	.011252
52	79786	1029	.9871030	.0128970	79216	949	.986449	.011981
53	78757	1083	.9862488	.0137512	78143	1000	.985413	.012797
54	77674	1140	.9853233	.0146767	77007	1047	.984303	.013597
55	76534	1202	.9842946	.0157054	75800	1097	.982982	.014468
56	75332	1270	.9831413	.0168587	74510	1154	.981304	.015486
57	74062	1342	.9818800	.0181200	73120	1202	.979489	.016441
58	72720	1418	.9805006	.0194994	71619	1255	.977430	.017530
59	71302	1501	.9789487	.0210513	70002	1310	.974820	.018720
60	69801	1588	.9772496	.0227504	68243	1358	.971807	.019893
61	68213	1681	.9753566	.0246434	66323	1395	.968721	.021029
62	66532	1778	.9732760	.0267240	64245	1434	.964976	.022324
63	64754	1880	.9709670	.0290330	61994	1463	.960274	.023606
64	62874	1985	.9684289	.0315711	59529	1482	.954040	.024890
65	60889	2094	.9656096	.0343904	56795	1473	.946052	.025928

TABLE XXXI—Continued.
FRATERNAL DEATH AND DISABILITY EXPERIENCE—Continued.

Age.	l_x	d_x	p_x	q_x	l_x^{aa}	d_x^{aa}	p_x^{aa}	q_x^{aa}
66	58795	2206	.9624798	.0375202	53732	1432	.935705	.026645
67	56589	2318	.9590380	.0409620	50276	1355	.922617	.026953
68	54271	2430	.9552247	.0447753	46387	1230	.906733	.026507
69	51841	2539	.9510233	.0489767	42062	1069	.890657	.025403
70	49302	2645	.9463511	.0536489	37464	866	.865553	.023117
71	46657	2744	.9411878	.0588122	32425	636	.841035	.019605
72	43913	2832	.9355088	.0644912	27270	404	.815443	.014827
73	41081	2909	.9291887	.0708113	22238	199	.789161	.008949
74	38172	2969	.9222205	.0777795	17549	43	.762593	.002477
75	35203	3009	.91455243	.0854757	13383			
76	32194	3026	.9060073	.0939927	9780			
77	29168	3016	.8965990	.1034010	6731			
78	26152	2977	.8861655	.1138345	4228			
79	23174	2905	.8746494	.1253506	2213			
80	20270	2799	.8619142	.1380858	844			
81	17471	2659	.8478049	.1521951	61			
82	14812	2485	.8322306	.1677694				
83	12327	2280	.8150402	.1849598				
84	10047	2050	.7959590	.2040410				
85	7997	1800	.7749156	.2250844				
86	6197	1539	.7516540	.2483460				
87	4658	1277	.7258480	.2741520				
88	3381	1023	.6974268	.3025732				
89	2358	788	.6658185	.3341815				
90	1570	579	.6312102	.3687898				
91	991	404	.5923310	.4076690				
92	587	264	.5502555	.4497445				
93	323	161	.5015480	.4984520				
94	162	89	.4506173	.5493827				
95	73	44	.3972603	.6027397				
96	29	19	.3448276	.6551724				
97	10	7	.3000000	.7000000				
98	3	3	.0000000	1.0000000				

l_x , d_x , p_x and q_x are taken from the National Fraternal Congress Table of Mortality and the disability ratios from the experience of four Fraternal beneficiary societies. Modifications of one or the other would have been necessary in order to have assigned any deaths (d_x^{aa}) to the l_x^{aa} column, or to have obtained any positive values for q_x^{aa} and p_x^{aa} at any age older than 74. I did not make the modifications, but permitted the last three columns to vanish at age 75. The formulas employed were those given by Mr. F. B. Mead in his paper in the May, 1910, Transactions of the Actuarial Society for values at ages younger than 75. For ages 75-80 the

following: $d_x^{ii} = d_x$, $l_x^{ii} = l_{x-1}^{ii} + i_{x-1} - d_{x-1}^{ii}$, $l_x^{aa} = l_x - l_{x-1}^{ii} (= l_{x-1}^{aa} - i_{x-1}$, because $q_x^{aa} = 0$).

For ages younger than 75: $l_{x+1}^{aa} = l_{x+1} - l_{x+1}^{ii}$.

$$l_{x+1}^{ii} = l_x^{aa} p_x^{ai} + l_x^{ii} p_x^i = l_x^{aa} r_x (1 - \frac{1}{2} q_x^i) + l_x^{ii} (1 - q_x^i),$$

$$\text{and } l_{x+1}^{aa} = l_{x+1} - l_{x+1}^{ii} r_x (1 - \frac{1}{2} q_x^i) - l_x^{ii} (1 - q_x^i).$$

TABLE XXXII.
FRATERNAL DEATH AND DISABILITY EXPERIENCE.

Age.	l_x^{ii}	d_x^{ii}	l_x^i	d_x^i	p_x^i	q_x^i	p_x^{ai}	q_x^{ai}
20	00	2	2191100	876400	.6000	.4000	.000096	.000024
21	10	6	1314700	456340	.6529	.3471	.000107	.000023
22	17	8	858360	260600	.6964	.3036	.000127	.000023
23	24	9	597760	160020	.7323	.2677	.000155	.000025
24	33	11	437740	104440	.7614	.2386	.000184	.000026
25	43	12	333300	71830	.7845	.2155	.000223	.000027
26	55	14	261470	51670	.8024	.1976	.000261	.000029
27	69	16	209800	38600	.8160	.1840	.000290	.000030
28	84	18	171200	29750	.8262	.1738	.000310	.000030
29	99	19	141450	23500	.8339	.1661	.000321	.000029
30	113	21	117950	18883	.8399	.1601	.000340	.000030
31	127	23	99067	15376	.8448	.1552	.000351	.000029
32	140	24	83691	12637	.8490	.1510	.000361	.000029
33	153	25	71054	10403	.8536	.1464	.000380	.000030
34	166	27	60651	8691	.8567	.1433	.000408	.000032
35	180	28	51960	7305	.8594	.1406	.000446	.000034
36	196	31	44655	6172	.8618	.1382	.000484	.000036
37	213	33	38483	5237	.8639	.1361	.000522	.000038
38	231	35	33246	4465	.8657	.1343	.000569	.000041
39	251	37	28781	3822	.8672	.1328	.000607	.000043
40	272	39	24959	3282	.8685	.1315	.000645	.000045
41	294	43	21677	2827	.8696	.1304	.000682	.000048
42	315	45	18850	2441	.8705	.1295	.000720	.000050
43	337	48	16409	2113	.8712	.1288	.000767	.000053
44	360	51	14296	1833	.8718	.1282	.000805	.000055
45	383	54	12463	1591	.8723	.1277	.000843	.000057
46	406	57	10872	1384	.8727	.1273	.000880	.000060
47	429	60	9488	1205	.8730	.1270	.000927	.000063
48	452	63	8283	1050	.8732	.1268	.000983	.000067
49	476	67	7233	917	.8733	.1267	.001058	.000072
50	502	70	6316	800	.8733	.1267	.001161	.000079
51	533	75	5516	699	.8733	.1267	.001302	.000088
52	570	80	4817	610	.8733	.1267	.001471	.000099
53	614	87	4207	534	.8732	.1268	.001677	.000113
54	667	95	3673	466	.8732	.1268	.001967	.000133
55	734	105	3207	406	.8732	.1268	.002388	.000162
56	822	118	2801	356	.8731	.1269	.003006	.000204
57	942	139	2445	310	.8731	.1269	.003811	.000259
58	1101	162	2135	271	.8730	.1270	.004720	.000320
59	1300	194	1864	237	.8730	.1270	.006050	.000410
60	1558	234	1627	207	.8730	.1270	.007773	.000527
61	1890	283	1420	180	.8730	.1270	.009599	.000651
62	2287	342	1240	158	.8729	.1271	.011894	.000806
63	2760	414	1082	137	.8729	.1271	.015096	.001024
64	3345	505	945	120	.8728	.1272	.019730	.001340
65	4094	622	825	105	.8728	.1272	.026238	.001782

TABLE XXXII—Continued.
FRATERNAL DEATH AND DISABILITY EXPERIENCE—Continued.

Age.	l_x^{ii}	d_x^{ii}	l_x^i	d_x^i	p_x^i	q_x^i	p_x^{ai}	q_x^{ai}
66	5063	773	720	92	.8727	.1273	.035255	.002395
67	6313	964	628	80	.8727	.1273	.047223	.003207
68	7884	1202	548	70	.8726	.1274	.062507	.004253
69	9779	1472	478	61	.8725	.1275	.078593	.005347
70	11838	1777	417	53	.8724	.1276	.104227	.007103
71	14232	2108	364	46	.8722	.1278	.130455	.008905
72	16643	2429	318	41	.8719	.1281	.158867	.010863
73	18843	2710	277	36	.8715	.1285	.188929	.012961
74	20623	2926	241	31	.8710	.1290	.219777	.015153
75	21820	3009	210	27	.8703	.1274	.251756	.017444
76	22414	3028	183	24	.8693	.1265	.291617	.020373
77	22437	3016	159	21	.8678	.1273	.347336	.024584
78	21924	2978	138	19	.8654	.1299	.444460	.032070
79	20961	2904	119	16	.8615	.1342	.575914	.042816
80	19426	2799	103	15	.8555	.1412	.860776	.066984
81	17410	2659						
82	14812	2485						
83	12327	2280						
84	10047	2050						
85	7997	1800						
86	6197	1539						
87	4658	1277						
88	3381	1023						
89	2358	788						
90	1570	579						
91	991	404						
92	587	264						
93	323	161						
94	162	89						
95	73	44						
96	29	19						
97	10	7						
98	3	3						

TABLE XXXIII.

FRATERNAL DEATH AND DISABILITY EXPERIENCE AND FOUR PER CENT.

Age.	r_x	$i^x =$ $r_x(i^{aa})$	C_x^1	M_x^1	1C_x	1M_x
20	.00012	12	384590.00	886491.89	5.2660	3692.6142
21	.00013	13	192560.00	501901.89	5.4854	3687.3482
22	.00015	15	105730.00	309341.89	6.0858	3681.8628
23	.00018	18	62427.00	203611.89	7.0221	3675.7770
24	.00021	21	39178.00	141184.89	7.8775	3668.7549
25	.00025	24	25908.00	102006.89	8.6565	3660.8774
26	.00029	28	17920.00	76098.89	9.7109	3652.2209
27	.00032	31	12872.00	58178.89	10.3380	3642.5100
28	.00034	33	9539.40	45306.89	10.5810	3632.1720
29	.00035	33	7245.50	35767.49	10.1740	3621.5910
30	.00037	35	5598.10	28521.99	10.3760	3611.4170
31	.00038	36	4383.00	22923.89	10.2620	3601.0410
32	.00039	37	3463.70	18540.89	10.1410	3590.7790
33	.00041	38	2741.80	15077.19	10.0150	3580.6380
34	.00044	41	2202.40	12335.39	10.3900	3570.6230
35	.00048	44	1780.00	10132.99	10.7210	3560.2330
36	.00052	48	1446.10	8352.99	11.2460	3549.5120
37	.00056	51	1179.80	6906.89	11.4890	3538.2660
38	.00061	55	967.21	5727.09	11.9140	3526.7770
39	.00065	58	796.09	4759.88	12.0810	3514.8630
40	.00069	61	657.31	3963.79	12.2170	3502.7820
41	.00073	64	544.41	3306.48	12.3250	3490.5650
42	.00077	67	452.00	2762.07	12.4060	3478.2400
43	.00082	71	376.21	2310.07	12.6410	3465.8340
44	.00086	74	313.81	1933.86	12.6690	3453.1930
45	.00090	77	261.90	1620.05	12.6750	3440.5240
46	.00094	80	219.06	1358.15	12.6630	3427.8490
47	.00099	83	183.40	1139.09	12.6320	3415.1860
48	.00105	87	153.66	955.69	12.7320	3402.5540
49	.00113	93	129.03	802.03	13.0860	3389.8220
50	.00124	101	108.24	673.00	13.6650	3376.7360
51	.00139	112	90.94	564.76	14.5710	3363.0710
52	.00157	124	76.31	473.82	15.5110	3348.5000
53	.00179	140	64.23	397.51	16.8400	3332.9890
54	.00210	162	53.90	333.28	18.7370	3316.1490
55	.00255	193	45.15	279.38	21.4630	3297.4120
56	.00321	238	38.07	234.23	25.4500	3275.9490
57	.00407	298	31.87	196.16	30.6400	3250.4990
58	.00504	361	26.79	164.29	35.6890	3219.8590
59	.00646	452	22.53	137.50	42.9670	3184.1700
60	.00830	566	18.92	114.97	51.7360	3141.2030
61	.01025	680	15.82	96.05	59.7640	3089.4670
62	.01270	815	13.35	80.23	68.8750	3029.7030
63	.01612	999	11.13	66.88	81.1780	2960.8280
64	.02107	1254	9.38	55.75	97.9780	2879.6500
65	.02802	1591	7.89	46.37	119.5300	2781.6720
66	.03765	2023	6.65	38.48	146.1400	2662.1420
67	.05043	2535	5.56	31.83	176.0800	2516.0020
68	.06676	3097	4.68	26.27	206.8400	2339.9220
69	.08394	3531	3.92	21.59	226.7600	2133.0820
70	.11133	4171	3.27	17.67	257.5600	1906.3220
71	.13936	4519	2.73	14.40	268.3100	1648.7620
72	.16973	4629	2.34	11.67	264.2800	1380.4520
73	.20189	4490	1.98	9.33	246.4800	1116.1720
74	.23493	4123	1.64	7.35	217.6300	869.6920
75	.26920	3603	1.37	5.71	182.8600	652.0620
76	.31199	3069	1.17	4.34	149.7700	469.2020
77	.37192	2555	.99	3.17	119.8900	319.4320
78	.47653	2144	.86	2.18	96.7360	199.5420
79	.61873	1486	.69	1.32	64.4690	102.8060
80	.92776	919	.63	.63	38.3370	38.3370

TABLE XXXIV.

FRATERNAL DEATH AND DISABILITY EXPERIENCE AND FOUR PER CENT.

Age.	D_x^{aa}	N_x^{aa}	D_x^i	D_x^{ii}	N_x^i
20	45638.00	915582.50	1000000.000	.....	2950822.04
21	43660.00	869944.50	576930.000	3.94	1950822.04
22	41767.00	826284.50	362190.000	6.16	1373892.04
23	39953.00	784517.50	242530.000	9.83	1011702.04
24	38216.00	744564.50	170770.000	13.56	769172.04
25	36554.00	706348.50	125030.000	15.76	598402.04
26	34960.00	669794.50	94308.000	20.36	473372.04
27	33434.00	634834.50	72763.000	24.09	379064.04
28	31973.00	601400.50	57091.000	27.16	306301.04
29	30572.00	569427.50	45354.000	31.61	249210.04
30	29231.00	538855.50	36366.000	34.61	203856.04
31	27947.00	509624.50	29370.000	36.77	167490.04
32	26715.00	481677.50	23857.000	40.54	138120.04
33	25536.00	454962.50	19476.000	42.47	114263.04
34	24407.00	429426.50	15985.000	43.25	94787.04
35	23323.00	405019.50	13167.000	45.71	78802.04
36	22284.00	381696.50	10881.000	47.75	65635.04
37	21288.00	359412.50	9016.700	49.41	54754.04
38	20332.00	338124.50	7489.800	51.60	45737.34
39	19414.00	317792.50	6234.600	54.34	38247.54
40	18534.00	298378.50	5198.800	56.01	32012.94
41	17688.00	279844.50	4341.400	58.83	26814.14
42	16876.00	262156.50	3630.100	61.16	22472.74
43	16097.00	245280.50	3038.500	62.26	18842.64
44	15348.00	229183.50	2545.300	63.69	15804.14
45	14628.00	213835.50	2133.700	65.27	13258.84
46	13936.00	199207.50	1789.700	66.88	11125.14
47	13271.00	185271.50	1501.800	68.26	9335.44
48	12632.00	172000.50	1260.600	69.11	7833.64
49	12018.00	159368.50	1058.400	69.19	6573.04
50	11426.00	147350.50	888.750	70.50	5514.64
51	10856.00	135924.50	746.290	71.82	4625.89
52	10306.00	125068.50	626.670	73.90	3879.60
53	9775.10	114762.50	526.210	76.85	3252.93
54	9262.50	104987.40	441.810	80.26	2726.72
55	8766.80	95724.90	370.950	84.78	2284.91
56	8285.90	86958.10	311.450	91.56	1913.96
57	7818.80	78672.20	261.470	100.65	1602.51
58	7363.80	70853.40	219.510	113.08	1341.04
59	6920.50	63489.60	184.260	128.62	1121.53
60	6487.20	56569.10	154.670	148.11	937.27
61	6062.20	50081.90	129.830	172.76	782.60
62	5646.40	44019.70	108.980	201.01	652.77
63	5239.00	38373.30	91.470	233.25	543.79
64	4837.30	33134.30	76.773	271.72	452.32
65	4437.50	28297.00	64.429	319.92	375.55
66	4036.70	23859.50	54.070	380.43	311.12
67	3631.90	19822.80	45.373	455.98	257.05
68	3222.00	16190.90	38.074	547.65	211.68
69	2809.20	12968.90	31.946	653.17	173.61
70	2405.90	10159.70	26.802	760.24	141.66
71	2002.20	7753.80	22.482	878.84	114.86
72	1619.20	5751.60	18.855	988.11	92.38
73	1269.60	4132.40	15.808	1075.75	73.52
74	963.34	2862.80	13.246	1132.11	57.71
75	706.40	1899.46	11.094	1151.74	44.46
76	499.16	1193.06	9.284	1137.60	33.37
77	335.31	693.90	7.760	1094.60	24.09
78	207.22	358.59	6.475	1028.80	16.33
79	108.38	151.37	5.388	945.76	9.85
80	42.99	42.99	4.463	842.77	4.46

INDEX

Actuarial Principles, Application of.....	147
Adequate Rates.....	253
Adverse Selection.....	247
Age and Cost.....	160
Algebraic Notation.....	193-217
Annuities.....	193
Disability.....	214
Premiums.....	193
American Notation.....	205
Amortization of Bonds.....	250
Annual Reports.....	276-284
Annuity, Kinds of.....	250
Assessments-as-needed Insurance.....	156
Assessment Associations.....	91-96
Assets.....	246
Associated Fraternities of America.....	62-66
Benefit Side to Insurance Contract.....	162
Benefits, Varying.....	193, 201
British Notation.....	205
Calculations by Commutation Columns.....	197
Certificate, Kinds of.....	219
Child Insurance.....	97
Commutation Columns, How to Use.....	216
Commutation Tables, Explanation of.....	150
Constitutions, Difficulty of Interpreting.....	303
Contracts, Variety of.....	106
Contribution and Cost.....	159
Contribution Side to Insurance Contract.....	162
Contributions, Varying.....	196-202
Cooperation.....	104, 164
Death Rate.....	157
Definitions.....	217-275
Actual Mortality.....	247
Adequate Rates.....	253
Adverse Selection.....	247
Amortization of Bonds.....	250
Annuitant.....	250
Annuity, Kinds of.....	250
Assets.....	246
Certificate and Policy, Kinds of.....	219
Comparison of Reserves.....	267
Concomitants of Change.....	269
Cost of Insurance.....	232
Development of u and k	234
Disability, Permanent and Total.....	274
Discount and Present Value.....	247
Division of Premium Into "Expense," "Mortality" and "Reserve" Elements.....	236

Equity of Surrender Values.....	235
Expected Mortality.....	247
Expiry.....	239
Group Insurance.....	248
Health and Accident Insurance.....	273
Incontestable.....	239
Indemnity Against Loss.....	219
Individual Reserve.....	234
Lapses.....	239
Legal Reserve.....	251
Liabilities.....	247
Life Expectancy.....	231
Loading.....	224
Loans.....	238
Maturity.....	239
Methods of Insurance.....	258
Mortality Rates.....	251
Mortality Tables (See Contents).....	220
Mutual, Mixed and Stock Companies.....	247
Natural Premiums.....	224, 259
Natural Premium Plan of Insurance.....	295
Net Premiums.....	222
Net Value.....	237
Non-Forfeitable.....	239
Pensions.....	252
Policy and Certificate, Kinds of.....	219
Present Value and Discount.....	247
Prospective Valuation.....	243
Readjustments.....	274
Renewal Premium.....	247
Reserve.....	224
Reserve, Initial, Mean and Terminal.....	245
Reserve Values.....	245
Retrospective Valuation.....	244
Stock, Mixed and Mutual Companies.....	247
Surplus.....	246
Surrender Value.....	237
Valuation.....	240
Solvency, A Test for When.....	240
Solvency, Not a Test for Fraternal Society.....	241
Diagrams.....	148-9, 223, 228, 230, 266, 268, 278
Disability, Permanent and Total.....	274
Disability Symbols.....	214
Distribution of Cost.....	158
Equivalent Promises.....	155
Exhibits.....	I—167, II—171, III—180, IV—181, V—182, VI—183
Expenses.....	119
Expiry.....	239
Expulsion of Members.....	301
Flexible Premium System.....	93
Fraternal and Life Company Contract Compared.....	154

Fraternal Beneficiary Societies	9-79, 104-111
Associated Fraternities of America.....	62
General Review of.....	104
History of.....	9
National Fraternal Congress and Legislation.....	16-60
Statistics of.....	75
Fraternal Experience Tables.....	122
Fraternity, Strength of.....	253
Formulas to Memorize.....	204
Friendly Societies.....	1-9
History of.....	2
Legislation Concerning.....	3
Origin of.....	1
Report of Royal Commission.....	7
Group Insurance.....	248
Health and Accident Insurance.....	273
Incontestable.....	239
Increasing Cost of Insurance.....	161
Indemnity Against Loss.....	219
Industrial Companies, History of.....	96
Insurance Contract.....	153-161
Age and Cost.....	160
Assessment-as-needed.....	156
Benefit Side and Contribution Side.....	162
Contribution and Cost.....	159
Death Rate.....	157
Distribution of Cost.....	158
Equivalent Promises.....	155
Fraternal and Life Company Compared.....	154
Inception of.....	194
Increasing Cost of Protection.....	161
Law of Mortality.....	157
Life Expectancy.....	161
Method of Computing Rates.....	156, 164
Natural Premiums.....	161
Possibility of Performance.....	161
Insurance Cost.....	232-237
Interest Earnings.....	303
Lapse Factor.....	177-190
Feasibility of.....	184-190
Premium Computation Including.....	177
Lapses.....	177-190, 239
Law of Mortality.....	157
Legal Reserve.....	251
Level Annual Premium.....	54, 61, 125, 172-5, 179
Computation of.....	175
Legislation.....	3, 16-74, 90, 297-300
Liabilities.....	247
Life Expectancy.....	161, 231
Life Insurance Companies.....	80-91
Fraternal Societies and Life Companies.....	80
History of.....	81

Legislative Investigation	90
Statistics of	90
Loading	224
Loans	238
Maternity Benefits	300
Maturity	239
Methods of Insurance	258
Mobile Bill	66-74, 297-300
Monthly Contributions	208-209
Commutation Columns	208
Formula	209
Mortality, Actual and Expected	247
Mortality Rates (See Insurance Contract)	251
Mortality Tables (See Tables in Contents)	122, 220
A Fiction	209-210
Diagrams	148
Normal, Sub-Normal and Super-Normal	223-226
Mutual, Mixed and Stock Companies	247
National Fraternal Congress	16-60
Legislation and Proceedings of	16-60
Report on Table of Mortality	52
Natural Premiums	161, 224, 259
Natural Premium Plan of Insurance	259
Net Contributions to be Valued	303
Net Premiums	222
Net Value	237
New York Conference Bill	66-74, 297-300
Non-Forfeitable	239
Observations on Present Industrial Regime	110
Open Assessment Associations	91-96
Flexible Premium System	93
History of	91
Statistics of	95
Operation Along Social and Fraternal Lines	108
Pensions	252
Policy, Kinds of	219
Possibility of Performing Insurance Contract	163
Preliminary Term Insurance	303
Premiums, Level and Increasing	172-174, 265-267
Premiums, Single and Annual	164-172, 207-212
Premiums, Renewal	247
Present Value	247
Present Value of Benefits	164
Present Value of Contributions	169
Rates, Method of Computing	156, 164
Readjustments	111, 274
Relations Between D & C, N & M, and S & R	205
Reports to Insurance Commissioners	276-284
Reserve	224-245
Formulas for Computing	215
Individual	234
Initial, Mean and Terminal	245

Legal.....	251
Methods of Determining Illustrated Values.....	216
Risk, Accident, Death and Sickness.....	245
Statistics and Explanations for Valuation.....	192
Stock, Mixed and Mutual Companies.....	276
Surplus.....	247
Surrender Value.....	246
Equity of.....	237
Similar Symbols.....	235
Symbols for Disability.....	213
Symbols for Premiums and Annuities.....	214
Tables (See Contents).	193
Valuation.....	240
Prospective.....	243
Retrospective.....	244
Test for Solvency When.....	241
Valuation Statistics and Explanations.....	276
Wives of Members, Benefits to.....	301

CONTENTS.

	Pages
FRIENDLY SOCIETIES.....	1-9
Origin, 1-2. History, 2-3. Legislation, 3-7. Report Royal Commission, 7-9.	
FRATERNAL BENEFICIARY SOCIETIES.....	9-79, 104-111
Inequity of Original Plans, 12-16. History, 9-16. Legislation and Proceedings National Fraternal Congress, 16-60. Major N. S. Boynton, 50-53. Report on National Fraternal Congress Mortality Table, 53-58. Dr. Oronhyatekha, 60-61. Associated Fraternities of America, 62-66, 74-75. Statistics, 75-79. General Review, 104-111.	
NEW YORK CONFERENCE BILL (being the Mobile Bill Amended).....	66-74
LIFE INSURANCE COMPANIES.....	80-91
Fraternal Societies and Life Companies, 80-81. History, 81-89. Statistics, 90. Legislative Investigation, 90-91.	
OPEN ASSESSMENT ASSOCIATIONS.....	91-96
History, 91-93. Flexible Premium System, 93-95. Statistics, 95-96.	
INDUSTRIAL COMPANIES.....	96-97
History, 96-97.	
CHILD INSURANCE.....	97-104
GENERAL REVIEW.....	104-111
Cooperation, 104, 164. Father Upchurch, 105. Variety of Contracts, 106, 107. Capacity of the Common People, 106. Ingenuity of Ignorance, 107. Actuarial Predictions not Verified, 108. Operation, along Social and Fraternal Lines, 109. In Harmony with Conditions, 110. The Present Industrial Regime and Observations, 110-111.	
READJUSTMENTS.....	111-119
EXPENSES.....	119-121
FRATERNAL EXPERIENCE TABLES.....	122-146
APPLICATION OF ACTUARIAL PRINCIPLES.....	147
MORTALITY TABLES.....	122-146, 148-150
Diagrams, 148, 149.	
EXPLANATION OF COMMUTATION COLUMNS.....	150-153
THE INSURANCE CONTRACT.....	153-164
Fraternal and Life Company Compared, 154-5. Equivalent Promises, 155-6. Assessments-as-Needed, 156. Method of Computing Rates, 156, 164-177. Law of Mortality, 157. Death Rate, 157-158. Distribution of Cost, 158-159. Contribution and Cost, 159-160. Age and Cost, 160-161. Natural Premiums, 161. Increasing Cost of Protection, 161. Life Expectancy, 161-162. Benefit Side and Contribution Side, 162-3. Possibility of Performance, 163. The Insurance Problem, 163-4. Cooperation, 164, 104.	
PRESENT VALUE OF BENEFITS.....	164-169
PRESENT VALUE OF CONTRIBUTIONS.....	169-172
LEVEL ANNUAL PREMIUM.....	172-174
GENERAL STATEMENT.....	175
ANOTHER METHOD OF COMPUTATION.....	175-177
COMPUTATION INCLUDING LAPSE FACTOR.....	177-183
FEASIBILITY OF LAPSE FACTOR.....	184-192

	Pages
THE INSURANCE LIABILITY	192-203
Death, Accident and Sickness Risk, 192-3. Symbols for Premiums and Annuities, 193. Inception of the Contract, 194. Varying Benefits, 193-5, 201-3. Varying Contributions, 196-7, 202-3.	
SHORT CUTS IN CALCULATIONS	197-206
Commutation Columns, 197-206. C_x , 197-199. M_x , 198. D_x , 199. N_x , 199-200. $P_x = M_x + N_x$, 200. Benefit Side and Payment Side, 200-2. 20-Year Term, 200. Pure Endowment, 200-1. Endowment Insurance, 201. Increasing or Cumulative Insurance, 202. Varying Benefits, 193-5, 202-3. Varying Contributions, 196-7, 202-3. R. and S. Columns, 203. Formulas to Memorize, 204. Relations Between D and C, N and M, and S and R, 205. American and British Notation, 205-6.	
PRACTICAL APPLICATION OF FORMULAS	206-217
Principle of Computations the same for Societies and Companies, 206. Assumptions Different, 206. Single and Annual Premiums for Whole Life, Term and Limited Payment Insurance and for Whole Life, Deferred and Temporary Annuities, 207-209. Commutation Columns for Monthly Contribution Rates, 208-9. An Original but Uselessly Intricate Formula for N_x^{12} and M_x^{12} , 209-211. Annual and Single Premiums for Limited Payment and Endowment Insurances and Various Modifications of Insurances and Annuities, 211-212. A Novel Plan, 212-213. Similar Symbols, 213.	
DISABILITY SYMBOLS	214-215
FORMULAS FOR COMPUTING RESERVES	215-216
Three Methods Illustrated, 216.	
USE OF COMMUTATION COLUMNS	216-217
Illustrated by Examples, 216-217.	
AN ENGLISHMAN'S CONCLUSION	217-219
Teach Insurance in Public Schools. Lack of Information Amongst Teachers.	
DEFINITIONS	217-275
Indemnity Against Loss, 219. Policy and Certificate, 219-220. Whole Life, Limited Payment, Endowment, Term, Renewable Term, Convertible Term, Instalment Policies or Certificates, 220. Mortality Tables, 220-222. Net Premiums, 222-224. Loading, 224. The Natural Premium, 224, 259. The Reserve, 224-231. Life Expectancy, 231-232. Insurance Cost, 232-237. Development of u and k , 234. Individual Reserve, 234-236. Equity of Surrender Values, 235-236. Division of Premium into "Expense," "Mortality" and "Reserve" Elements, 236. Reserve a Fiction, 236-237. The Net Value, 237. Surrender Value, 237-8. Loans, 238-9. Non-Forfeitable, 239. Incontestable, 239. Lapses, 239. Expiry, 239. Maturity, 239-240. Valuation, 240-245. Difference for Life Companies and Fraternal Societies, 240-1. When a Test of Solvency, 241-2. Can not be Made Test of Solvency for Fraternal Society, 241-3. Prospective Valuation, 243-4. When an Absurdity, 244. Results of, 244. Retrospective Valuation, 244-5. Reserve Values, 245-6. "Initial," "Mean" and "Terminal" Reserves, 245-6. Surplus, 246. Assets, 246-7. Liabilities, 247. Stock, Mixed and Mutual Life Companies, 247. Renewal Premium, 247. Present Value, 247. Actual Mortality, 247. Expected Mortality, 247. Adverse Selection, 247. Group Insurance, 248-9-250. Annuity, Annuitant, Life Annuity, Perpetual Annuity, Temporary Annuity, Contingent Annuity, Deferred Annuity, Joint Annuity, Survivorship Annuity, 250. Amortization of Bonds, 250-1. Legal Reserve, 251. Mortality Rates, 251-2. Pensions, 252-3. Strength of Fraternity, 253. Adequate Rates, 253-4. Competing for Adequacy, 254-5. Adequacy, Permanency, Attractiveness, 255-6-7. Legislation, 257-8. Insurance Methods, 258-9. The Natural Premium Plan, 259-265. Level Premium Plan, 265-7. Comparison of Reserves, 267-8-9. The Last Man, 269. Concomitants of Change, 269-270. Misleading Statements, 270-1. Criticism, 271-2. The Home of Brotherhood, 272-3. Health and Accident Insurance, 273-4. Permanent Total Disability, 274. Readjustments, 274-5.	

VALUATION STATISTICS AND EXPLANATIONS.....276-300

Compilation of Statistics, 276-283. Three Methods of Valuation Allowed by State Laws, 276-7. Form of Sheet for Protection, 276. Valuation Factors, 277. The ${}_nU_x$ and ${}_nK_x$ Factors for Valuation under "Section 23b," 277. How to transcribe Data with Forms of Sheets, 277, 8, 9, 280. How to Prepare Schedule VI of the Annual Report, 280-1. Additional Forms 281-2. Suitable for Tabulating Deaths and Lapses, 282. Investigation of Mortality Experience, 282, 3. Examples of Valuations by the "Net Reserve," "Tabular" and "Accumulation" Methods, 283-296. "Net Reserve" Method, 283-4. "Tabular" Method, 284-5. Prospective Valuations, 285-6. Retrospective Valuations, 286-7. Identical Valuation Results under the three Methods with the same Tabular Contribution Rates, otherwise Different Results, 286. Valuation Results differ from Actual Results in Practical Operation, 287-8. Valuation on the "Accumulation Basis" Advocated by Commissioner Ekern and Actuary Anderson compared with the Treatment in this Book, 288-9. Retrospective Valuation compared with the Prospective Method, 289-296. Retrospective Valuation necessary for Apportionment of Funds, 289. "Net Reserve" Method applicable to Few Fraternal Societies, 289. Its Meaning, 290. "Tabular" Method has many advantages, 290. "Accumulation" Method is Best Suited for the Majority of Societies and Especially Valuable in Connection with the "Tabular," 290-6. Examples of Prospective and Retrospective Valuations, 292-3-4. Section 23b, 297-300.

MATERNITY BENEFITS.....300-1

BENEFITS TO MEMBERS' WIVES.....301-2

GENERAL COMMENTS.....302-3

Right to expel members not considered in Valuations, 301. Difficulty to Interpret Constitutions, 303. Interest Earning Secondary, 303. "Net" Contributions to be Valued, 303. Preliminary Term and Other Methods to Provide Expense, 303.

TABLES

CONTRIBUTION RATES FOR CHILD INSURANCE.....101-102

SOCIETIES ADMITTING MEN ONLY.....122

SOCIETIES ADMITTING WOMEN ONLY.....123

SOCIETIES ADMITTING MEN AND WOMEN.....123

43 SOCIETIES COMBINED.....123

CONTRIBUTION RATES FOR 43 SOCIETIES.....125

MORTALITY TABLES OF 43 SOCIETIES.....128-133

Attained Ages, Existing, Lapses, Deaths, Exposures, Unadjusted and Adjusted Death Ratios, 128-9. Unadjusted and adjusted l_x (living) d_x (dying) p_x probability of living, q_x (probability of dying) 130-1. Test of Graduation, 132-3.

MORTALITY TABLES FOR MEN ONLY.....134-137

Attained Ages, Exposures, Unadjusted and Adjusted Death Ratios, l_x (living) d_x (dying), 134-5. Test of Graduation, 136-7.

MORTALITY TABLES FOR WOMEN ONLY.....138-140

Attained Ages, Exposures, Unadjusted and Adjusted Death Ratios, l_x (living) d_x (dying), 138-9. Test of Graduation, 140.

MORTALITY TABLES FOR MEN AND WOMEN.....141-144

Attained Ages, Exposures, Unadjusted and Adjusted Death Ratios, l_x (living), d_x (dying) 141-2. Test of Graduation, 143-4.

COMPARATIVE DEATH RATIOS.....145-146

Males. New English Experience, Scandinavian Experience, Australian Experience, Canada Life, National Fraternal Congress, American Experience, Forty-three Societies. Females. Farr's, Scandinavian.

	Pages
COMPUTATION OF PREMIUMS.....	164-183
<p>Exhibit I. Insurance Years, Instalments of Claims, Present Value of \$1.00, Present Value of Claims (or Benefits), 167. Exhibit II. Beginning of Years, Instalments of Contributions, Present Value of Contributions, 171. Test of Computed Premiums, 176-7. Level Premiums with and <i>without</i> Lapse Factor, 179. Computations with Lapse Factor, 179. Computations with Lapse Factor—Exhibit III—Insurance years, Insurance at Beginning of Years, Probability of Dying, Instalment of Claims, Lapse Ratios, Terminations by Lapse, 180. Exhibit IV—Present Value of Claims, 181. Exhibit V—Insurance, Probability of Living, Protection at Beginning of Years, Instalments of Contributions, 182. Exhibit VI—Present Value of Contributions, 183.</p>	
COMPUTATION OF RESERVES.....	216
ILLUSTRATING LEVEL AND INCREASING PREMIUMS.....	261-262
“NET RESERVE” VALUATION.....	283
“TABULAR” VALUATION.....	284-285
“ACCUMULATION” VALUATION.....	287
PROSPECTIVE AND RETROSPECTIVE VALUATION.....	293-294
FORM FOR CREDIT EXHIBIT.....	297
APPENDIX.....	304-355
TABLE I. (N. F. C.).....	304-305
<p>Age (x) Number Living (l_x), Number dying (d_x), Probability of Dying (q_x). Death Rate per 1000, Discounted Death-Rate ($q_x v^x$), Life Expectancy (e_x) Average Duration of Life.</p>	
TABLE II. (N. F. C. COM. COLS. & 4%).....	306-307
<p>Age (x) Present value of One due n Years Hence (v^n), D_x, N_x, S_x, C_x, M_x, R_x.</p>	
TABLE III. (N. F. C. DERIVED VALUES, 4%).....	308-309
<p>Life Annuity (a_x). Whole Life, Single Premium (A_x). Whole Life Annual Premium (P_x) Term to Age 70, Annual Premium (${}_{|70-x}P_x$) Annuity of \$100 Beginning at age 70. Annual premium Temporary Annuity to Age 70.</p>	
TABLE IV. (N. F. C. AND 4% ANNUAL PREMIUMS).....	310
<p>Twenty Payment Life (${}_{20}P_x$) Ten Payment Life (${}_{10}P_x$) Twenty Year Term (${}_{|20}P_x$) Ten Year Term (${}_{|10}P_x$) Five Year Term (${}_{|5}P_x$).</p>	
TABLE V. (N. F. C. & 4% MONTHLY BASIS).....	311
<p>N_x^{12}, $\log. N_x^{12}$, M_x^{12}, $\log. M_x^{12}$.</p>	
TABLE V*. (N. F. C. & 4% MOMENTLY BASIS).....	312
<p>Life Annuity (\bar{a}_x), Whole Life Annual Premium (\bar{A}_x), Whole Life Annual Premium (\bar{P}_x).</p>	
TABLE VI. (N. F. C. AND 3½% COM. COLS.).....	313-314
<p>D_x, N_x, S_x, C_x, M_x, R_x.</p>	
TABLE VII. (N. F. C. & 3% COM. COLS.).....	315-316
<p>D_x, N_x, S_x, C_x, M_x, R_x.</p>	
TABLE VIII. (N. F. C. & 3½% AND 3%).....	317
<p>Life Annuity (a_x) Whole Life Single Premiums, (A_x) Whole Life Annual Premium (P_x).</p>	
TABLE IX. (N. F. C. & 3%, 3½% AND 4% MONTHLY PREMIUM RATES).....	318
TABLE X. (N. F. C. AND 3%, 3½%, AND 4%).....	319
<p>Valuation Columns, u and k.</p>	

	Pages
TABLE XI. (MAKEHEMIZED N. F. C.).....	320-321
Number living (l_x) number dying (d_x) Probability of Living (p_x) Probability of dying (q_x) Force of Mortality (μ_x).	
TABLE XII. (MAKEHEMIZED N. F. C. & 4%) D_x, N_x	322
TABLE XIII. (MAKEHEMIZED N. F. C. & 4%).....	323
Life Annuity (a_x) Sing. Prem. (A_x) An. Prem. (P_x).	
TABLE XIV. (MAKEHEMIZED N. F. C. & 4%, TWO LIVES).....	324
Living (l_{xx}), Dying (d_{xx}), log. l_{xx} , log. d_{xx} . Uniform Seniority.	
TABLE XV. COM. COLS. FOR TWO LIVES, 4%.....	326-327
$D_{xx}, N_{xx}, C_{xx}, M_{xx}$.	
TABLE XVI. DERIVED VALUES TWO LIVES, 4%.....	328
Life Annuity (a_{xx}) Sing. Prem. (A_{xx}), An. Prem. (P_{xx}).	
TABLE XVII. N. F. C. WHOLE LIFE TERMINAL RESERVES, 4%.....	329-333
TABLE XVIII. AMERICAN EXPERIENCE TABLE OF MORTALITY.....	334
Living (l_x), Dying (d_x), Prob. Dying (q_x) Life Expectancy (e_x).	
TABLE XIX. COM. COLS. AT 4%, D_x, N_x, M_x, R_x	335-336
TABLE XX. AM. EXPERIENCE TABLE 4% VALUES.....	337-338
Life Annuity (a_x), W. L. Sing. Prem. (A_x), W. L. Annual Prem. (P_x), Valuation Cols. u and k.	
TABLE XXI. INTEREST TABLES, THREE PER CENT.....	339
Amt. of 1.00 at End of n Years $(1+i)^n$. Present Value of 1.00 Due n Years Hence (v^n). Amt. of 1.00 Per Annum at End of n Years (S_n^-). Present Value of 1.00 Per Annum for n Years (a_n^-).	
TABLE XXII. INTEREST TABLES, $3\frac{1}{2}\%$, (SAME AS XXI).....	340
TABLE XXIII. INTEREST TABLES, 4%, (SAME AS XXI).....	341
TABLE XXIV—DEATH AND DISABILITY (1902 FUNCTIONS).....	342
N. F. C. Prob. of Dying (q_x), Prob. of Disability (i_x) Prob. of Death or Disability ($q'_x = q_x + i_x$).	
TABLE XXV. COMBINED DEATH AND DISABILITY.....	343
Actives ($^a l_x$), Number Dying and Disabled at Age (x) out of $^a l_x$ persons ($d'_x = ^a l_x - ^a l_{x+1}$), Number Disabled ($^i l_x = ^a l_x \times i_x$).	
TABLE XXVI. DEATH AND DISABILITY COM. COLS., 4%.....	144
$^a D_x = v^x ^a l_x$, $^a N_x = \sum ^a D_x$. $C'_x = v^{x+1} d'_x$, $M'_x = \sum C'_x$.	
TABLE XXVII. COM. COLS. 4% MONTHLY.....	345
$^a D_x^{12}$, $^a N_x^{12}$, C_x^{12} , M_x^{12} .	
TABLE XXVIII. DISABILITY ONLY COM. COLS., 4%.....	346
$^i C_x = v^{x+1} i l_x$, $^i M_x = \sum ^i C_x$.	
TABLE XXIX. LOGARITHMS OF COM. COLS.....	347
TABLE XXX. DERIVED VALUES, 4%, MONTHLY.....	348-349
$^a a_x^{12}$, $^a A_x^{12}$, $^a P_x^{12}$ and logarithms.	
TABLE XXXI. DEATH AND DISABILITY (1910 FUNCTIONS).....	350-351
N. F. C. l_x, d_x, p_x and q_x . Death and Disability l_x^{aa} , d_x^{aa} , p_x^{aa} , q_x^{aa} .	
TABLE XXXII. l_x^{ii} , d_x^{ii} , l_x^i , d_x^i , p_x^i , q_x^i , p_x^{ai} , q_x^{ai}	352-352
TABLE XXXIII. r_x , $i_x = r_x^{aa}$, C_x^i , M_x^i , C_x^i , M_x^i	354
TABLE XXXIV. D_x^{aa} , N_x^{aa} , D_x^i , D_x^{ii} , N_x^{ii} , N_x^i	355

